ESTERVILLE III.—The property of L. SPENCER, Westchester, N. Y.

To which the first Premium for the best Short Horn Cow was awarded at the 26th Annual Fair of the American Institute, Oct., 1853.

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A

12th annual report —

TRANSACTIONS

OF THE

AMERICAN INSTITUTE

OF THE

CITY OF NEW-YORK,

FOR THE YEAR

1853.

ALBANY:
C. VAN BENTHUYSEN, PRINTER TO THE LEGISLATURE,
No. 407 Broadway.
1854.

AMERICAN INSTITUTE.

TRUSTEES AND COMMITTEES FOR 1853.

COMMITTEE ON THE ADMISSION OF MEMBERS.

George F. Barnard,
Hiram Dixon,
Henry Meigs,
James F. Hall,
John W. Chambers.

COMMITTEE ON CORRESPONDENCE.

James H. Titus,
F. P. Schoals,
S. R. Comstock,
Linus W. Stevens,
William H. Browne.

COMMITTEE ON THE LIBRARY.

Ralph Lockwood,
Alexander Knox,
Edwin Williams,
William A. Whitbeck,
William Hibbard.

State of New-York.

No. 150.

IN ASSEMBLY, MAR. 15, 1854.

ANNUAL REPORT OF THE AMERICAN INSTITUTE.

New-York, *March* 15, 1854.

To the Hon. Robert H. Pruyn,
Speaker of the House of Assembly.

Sir—I herewith transmit the annual report of the American Institute of the city of New-York, for the year 1853.

Respectfully,
Your obedient servant,
ADONIRAM CHANDLER,
Corresponding Secretary.

TWELFTH ANNUAL REPORT

OF THE TRUSTEES OF THE AMERICAN INSTITUTE.

The Trustees of the American Institute present herewith a report of their proceedings in the department of agriculture, manufactures, and the mechanic arts, for the year 1853, containing statements of their exhibitions of useful farm stock, consisting of native cattle, and of mixed and pure breed, derived from the best herds of Europe; of horses, sheep, swine, of various breeds; and also an immense variety of poultry. Their exhibition of horticultural productions, of agricultural implements, new and improved, and their ploughing and spading match are also herein detailed.

The increased number of agricultural and horticultural exhibitions, which are now annually held, embracing State fairs in many of our States, with county fairs in a large number of the counties of various States, and these annually augmenting, give assurance that our farming interest has, within a few years, received an impetus, before unknown; and that an unprecedented zeal and desire for accurate scientific knowledge, in regard to culture, is rapidly being diffused throughout the rural districts of our country. That the current of public feeling is shaping to itself such a course, must be gratifying in a high degree, to the philanthropist. May we not expect, that the monotony of the ordinary pursuits of the farmer will experience a change, favorable to the enterprising spirit of our people? That agriculture, the source whence all our temporal wants derive their supplies, will cease to be regarded as a pursuit, furnishing but little attraction for enterprize, intellect or genius? That multitudes will find inducement to remain in the enjoyment of pure air, open fields, and invigorating breezes, instead of fleeing to the pent up closets of our cities? It is much to be desired that such results may follow.

The improvements annually manifested in the construction and better adaptation of agricultural implements, seem still to occupy largely the attention of our inventors and artisans. From the last or seventh census returns, we learn, that, at the present time, there is in the United States, 150,000,000 of dollars invested in implements and machines for aiding and abridging the work of the hands in cultivating the earth, and in preparing its produce for consumption. There is still room for improvement. Agriculture furnishes an immense field for the exercise of man's ingenuity, and there is no rational probability of its sudden diminution. Steam yet remains to be applied to a variety of useful purposes in agriculture. The vast prairies of the west await its potent arm, to aid in pouring forth sustenance to millions.

The details of our recent cattle show, will be found interesting. It is doubtful, whether a greater number of superior animals have been brought together before in the United States. The stock of neat cattle, in any country, particularly in our own, where the means of rearing would seem to be exhaustless, is of great and constantly growing importance. From them we derive a large proportion of our necessary aliment, as well as materials for the manufacture of many articles of the first necessity; the faithful labor of the patient ox, where shall we find its equivalent? Strike neat cattle from the list of agricultural products, and what should we substitute to fill the void? The entire stock in America comes through importation from Europe. We learn that the first neat cattle were brought by Columbus, in 1493. In 1553, neat cattle were first carried to Newfoundland, by the Portuguese. In 1611, they were brought from England to Virginia. In 1624, importations were made from England into Massachusetts, and in 1625, from Holland to New-York. It is probable that importations were made at subsequent periods and at various intervals, down to the commencement of the revolution, as the French had neat cattle in Illinois, in 1750. What may properly be understood by the terms "native stock," is undoubtedly the progeny of various importations, down nearly to the commencement of the present century. Among these we had the blood of the best breeds in Europe, and had our agriculturists devoted as much attention and care to breeding and

provement, as has been done by our transatlantic friends, there is a reasonable probability, that a race, equal to the best in Europe, might have been produced. This having been neglected, we now find that the readiest and cheapest means of improvement is, by a recourse to importations from abroad. We are gratified to know, that the enterprize and liberality of several of our fellow citizens is now closely directed to this object.

For the purpose of encouraging, improving and sustaining American genius, American art, American manufactures, and American labor, the Institute, for the last twenty-six years, has held its annual fair in the city of New-York. The receipts for admissions to these fairs, have but little more than defrayed the current expenses of them, including the awards to meritorious exhibitors. The Institute therefore has been maintained by the voluntary aid and labor of patriotic citizens. It has extended its friendship to all the citizens of the United States who have sought it. We claim that these efforts have given a very decided impetus to the improvements in the mechanic arts and manufactures, by which their progress in the United States has been particularly distinguished.

In 1819 there was not a lathe in our country capable of producing an iron surface fourteen inches square. Look now at our machine shops, and tell us where they are surpassed? From the smallest cambric needle to the most ponderous steam ships, we yield to no nation. Such are our mineral resources, that any interruption to intercourse with other nations, cannot abridge our ability for production in any of the varied pursuits requiring mechanical skill.

The progress of the mechanic arts in our country is unparalleled. But a few years ago we were dependents on Europe for almost every manufactured article. Now, we can enumerate a long list of articles, of indispensible necessity, made by our mechanics and artizans at home, of better quality than those obtained abroad, and as cheap. The importation of many of them has ceased altogether, and they are all rapidly diminishing. Of these we may enumerate cast and wrought iron, in an almost endless variety of

forms for ornament and utility; boots and shoes, hats, edge tools, carpenters' tools, spades and shovels, chains of various kinds, clocks, gold and silver ware, carriages, wagons and sleighs, agricultural implements, cabinet furniture, musical instruments, paper, nails and brads, wood screws, saddlery and harness, saddlery hardware, needles, pins, hooks and eyes, mathematical instruments, glass, india rubber goods, glass fixtures, ready made clothing, ladies' hats, steel-yards and scales, saws of all kinds, and a multitude of other articles which enter into our every day wants. Of cotton and woolen fabrics, we possess the ability to supply the demands of our country, whenever circumstances call it into action.

The fostering care of the American Institute has been closely directed to these productions for the last twenty-six years, and it is gratifying to know that the spirit which has thus far sustained the Institution, still predominates among its members.

ROBERT LOVETT,
ROBERT L. PELL,
D. MEREDITH REESE,
H. MEIGS,
ADONIRAM CHANDLER,
E. T. BACKHOUSE,
Trustees.

FINANCES.

The following is the financial condition of the American Institute on the 1st day of February, 1854:

Balance in the treasury Feb. 1, 1853,		$1,429 40
The Receipts of the year have been,		
From Treasurer of the State of New-York, for the years 1852–53,	$1,900 00	
From rent of Store No. 351 Broadway, from Nov., 1852, to Nov., 1853,	3,000 00	
From interest on bond, July, 1852, to January, 1854,	450 00	
From admission fees and annual dues,	1,507 00	
From reports,	4 00	
From certificates of award,	40 00	
From duplicate medals,	28 00	
		6,929 00
From F. M. Ray, for "Ray premium,"		700 00
From note discounted at the Mechanic's Banking Association,	7,000 00	
Less interest,	126 19	
		$6,873 81
		$15,932 21

Payments.

Real Estate.

Interest on bond, $25,000, Nov., 1852, to Nov., 1853,	$1,625 00	
Insurance,	124 00	
Taxes and water rate,	678 30	
Assessment, sewer in Leonard-street,	60 87	
Mason work,	15 88	
Painting interior and rear walls,	177 84	
Repairs,	1 74	
Carried forward,	$2,683 63	$15,932 21

Fitting up Rooms.			
Brought forward, ...		$2,683 63	$15,932 21
Making cases, ...	$69 75		
White-washing and cleaning,	15 00		
Oil cloth, ...	5 50		
Repairs of stoves, ...	4 75		
Gilt mouldings and frames,..	27 35		
		122 35	
Library.			
Books and periodicals.	$126 64		
Binding, ...	100 00		
Subscription to newspapers, .	61 75		
Desk, ...	20 00		
Press and stamp for library, .	5 00		
		613 39	
Miscellaneous Bills.			
Expenses of Farmer's Club:			
Reporting 22 meetings,....	$220 00		
Printing reports,.........	189 00		
Insurance library and property, ...	50 50		
Stationery, ...	23 80		
Printing blanks, tickets, &c.,.	28 75		
Gas, ...	80 56		
Coal, ...	33 00		
Ice, ...	13 00		
Portrait of Gen. Johnson, for Transactions, ...	60 00		
Engraving for Transactions, .	10 00		
Agent's expenses at Albany,.	6 00		
Crape used at the President's funeral,.	7 13		
250 specimens of model fruit,	250 00		
Duplicate medals,..........	32 25		
Petty cash, postage, advertisements, subscriptions to papers, &c., ...	192 14		
		1,196 13	
		$4,615 50	$15,932 21

Brought forward,		$4,615 50	$15,932 21
Ray Premium.			
Best brake for railroad cars,	$400 00		
night seats for do,	300 00		
		700 00	
On account of the 25th Annual Fair.			
Premiums,	$918 00		
Printing,	136 60		
Repairs,	3 00		
Advertising,	5 00		
Pipes in machine room,	123 94		
Bleaching muslin,	9 91		
		1,196 45	
On account of the 26th Annual Fair.			
Appropriation by the Institute to pay bills, (deficiency of receipts,)	$5,000 00		
Less amount repaid treasurer,	634 54		
		4,365 46	
Salaries.			
Agent,	$1,150 00		
Recording secretary,	575 00		
Clerk,	900 00		
Librarian,	567 67		
Boy,	215 00		
		3,407 67	
			$14,285 08
Balance in the treasury, Feb. 1, 1854,			$1,647 13

GENERAL STATEMENT OF THE FUNDS OF THE AMERICAN INSTITUTE.

Special deposite in the Mechanics' Banking Association, on interest to May 1, 1854, at 5 per cent,..	$15,000 00
Loaned on bond and mortgage at 6 per cent, due May 1, 1854, ...	5,000 00
	$20,000 00
Less note discounted by the Mechanics' Banking Association, ...	7,000 00
	$13,000 00
Balance in the treasury, Feb. 1, 1854,...........	1.647 13
Total, ...	$14,647 13

Real Estate.

Property No. 351 Broadway, cost	$45,000 00
Less amount paid, ...	20,000 00
Leaving due, ...	$25,000 00

REPORT OF THE MANAGERS

OF THE

TWENTY-SIXTH ANNUAL FAIR, FOR 1853.

The Board of Managers of the Twenty-sixth Annual Fair of the American Institute, beg leave to

REPORT:

That the annual election for Managers of the Fair was held on the 12th day of May, and on the 14th the Board organized by the appointment of Mr. John A. Bunting as Chairman, and John W. Chambers as Secretary.

Circulars were at once issued, and advertisements calling attention to the exhibition were inserted in a number of prominent papers throughout the country, stating that the exhibition would open on the 6th day of October, but in consequence of the delay on the part of exhibitors in bringing forward their contributions, the day of opening was postponed until Monday, the 10th.

It is proper to observe that the crystal palace opened in July last, and the novelty of this exhibition, purporting to exhibit the products of all nations, drew a large number of exhibitors who were in the habit of attending the Fairs of the Institute.

We shall not attempt to disguise the fact, however, that our own exhibition from this cause suffered very material loss; our visitors, on whom we rely for support, were very naturally at tracted by the greater novelty.

The last exhibition of the Institute, contrary to our anticipations, has proved more disastrous in a pecuniary point of view than any held since its formation. Our charter confines us to such objects and pursuits as are calculated to encourage and promote domestic industry in this State and the United States in agriculture, commerce, manufactures and the arts. For the purpose of promoting and improving these, all our means have stood pledged, and our entire efforts have been directed, for a period of twenty-six years.

The 27th section of the by-laws of the Institute makes it obligatory on the Board of Managers to hold a Fair in the city of New York in the autumn of each year; so that it's not optional with the Board of Managers whether to hold a Fair or not, as has been supposed by many of our members.

The total receipts at Castle Garden amounted to only $3,974, while the receipts of 1852 were $23,610, showing a difference of receipts of near $20,000.

We are encouraged to believe, however, that the manufacturers, mechanics, artists and inventors of our country will by no means find it their interest, on any inducement, to abandon an institution which has devoted nearly all its means for twenty-six years exclusively in promoting their advancement.

The Cattle Show, under the superintendence of the committee of agriculture, was held on Hamilton Square, a beautiful plot of ground of ten acres, granted by the Corporation of the City of New-York to the American Institute for that express purpose. It is situated between 66th and 69th-streets, and the 3d and 4th avenues. A portion 600 feet long by 400 feet wide was enclosed with a substantial fence, and arranged with suitable sheds, pens and stalls. The number of entries in this department were 125, embracing 92 horses, 262 horned cattle, 120 sheep, 70 swine, and 131 coops of poultry, and in the opinion of many, was considered one of the best exhibitions ever held in the United States: but in consequence of the difficulty in reaching the ground, and the inclement state of the weather on the last day of the exhibition, the

attendance was not so large as the preceding year. The amount received for admissions was $906.87, while the receipts of 1852, were $1,566.87.

The ploughing and spading matches, held also under the supervision of the committee of agriculture, took place at Flatbush, L. I., on land belonging to Mr. A. D. Frye. There were nine competitors for the premiums on ploughing, and six for the premiums on spading.

The anniversary address was delivered at the Broadway Tabernacle on the evening of the 20th of October, by the Hon. Wm. H. Seward, of the United States Senate, before an immense audience. 1000 copies of which have been printed for distribution among the members.

The premium committee, of whom Mr. Joseph Torrey was chairman, performed the duty assigned them with entire satisfaction, and report that the following premiums have been awarded, viz:

25 gold medals.
166 silver medals.
126 silver cups.
380 diplomas.
132 volumes of books.
$20 and 3 bronze medals.
(The Van Schaick premium for silk.)

The following is a statement of the receipts and expenditures of the 26th Annual Fair.

RECEIPTS.

To cash received from sales of tickets at Castle Garden,

Monday, Oct.	10,....	$143 00
Tuesday,	11,....	212 50
Wednesday,	12,....	297 50
Carried forward,..................		$653 00

Brought forward,		$653 00	
To cash received Thursday, Oct.	13,	305 50	
Friday,	14,	346 50	
Saturday,	15,	205 50	
Monday,	17,	282 50	
Tuesday,	18,	348 50	
Wednesday,	19,	410 00	
Thursday,	20,	352 50	
Friday,	21,	195 00	
Saturday,	22,	233 00	
Monday,	24,	60 00	
Tuesday,	25,	260 50	
Wednesday,	26,	299 25	
do	do	22 87	
			$3,974 62
To cash received at cattle show,			
Wednesday, Oct.	19,	$117 00	
Thursday,	20,	570 00	
Friday,	21,	279 87	
Sales of catalogue,		9 07	
			975 94
Total,			$4,950 56
Discount on uncurrent money,			8 64
			$4,941 92
To cash from treasurer of the Institute, per resolution Nov. 3, 1853,			5,000 00
			$9,941 92

EXPENDITURES.

By printing and publication committee.

Printing circulars, blanks, invitation tickets, hand-bills, &c.,	$424 95		
Advertising,	293 81		
Blank books, stationery, &c.,	37 66		
		756 42	
Carried foward,		$756 42	$9,941 92

Brought forward,......... ...		$756 42	$9,941 92
By agricultural committee.			
Erecting fences, sheds, pens, &c.,...........	$860 00		
Advertising, (extra,)....	153 22		
Clerk and laborers,.....	60 50		
Rosettes for cattle,......	25 75		
Refreshments for judges and committees,......	125 00		
Refreshments at ploughing match,..........	19 50		
Sundries, tubs, ropes, &c.,	49 34		
		1,284 31	
By Horticultural committee.			
Clerk,................	$47 00		
Laborers,.............	230 50		
Box wood,............	25 50		
Tubes, use of crockery &c.,	53 08		
		356 08	
By committee on clerks, police and labor.			
Superintendent,........	$180 00		
Clerks at desk, managers' room, cloth and hardware departments,	212 50		
Police and night watch,.	571 50		
Laborers,............	205 74		
		1,169 74	
By finance committee.			
Ticket sellers....................		92 00	
By ticket committee.			
Ticket receivers,.......	$84 00		
Counter,.............	20 00		
		104 00	
Carried forward,.............		$3,762 55	$9,941 92

Brought forward,.....		$3,762 55	$9,941 92
By light committee.			
Gas light,..............	$242 61		
Oil, use of lamps & candles	234 41		
Gas fixtures,...........	60 50		
Lighting & clean'g lamps,	107 75		
		645 27	
By committee on carpenters' work.			
Covering bridge,........	$240 00		
Fitting up interior, ...	490 50		
		730 50	
By machine committee.			
Use of engine,..........	$175 13		
Lead pipe and iron fixt's,	111 39		
Superintendent,........	78 00		
Labor,................	88 06		
White washing, ...	30 00		
Coal, ...	35 00		
		517 58	
By committee on refreshments.			
Dinners for managers, ...		180 67	
Miscellaneous bills.			
Music,................	$578 50		
Anniversary address,....	156 04		
Muslin for tables, flags, &c	97 07		
Fire works,............	25 00		
Glazing transparency, &c;	77 38		
Cleaning room, ...	30 00		
		963 99	
By premium committee.			
Gold & silver for medals,	$1,002 25		
Silver cups,............	662 00		
Silver ware,..........	18 00		
Diplomas,.............	28 00		
Medal cases,..........	84 00		
Books,................	128 82		
Cash premiums,........	583 75		
		2,506 82	
Total expenses,..............			9,307 38
Balance in bank, this day,.................			$634 54

By a rule, adopted by the agricultural committee, the successful competitors have the privilege of receiving the value of their premiums in cash; some, it will be seen, have adopted that method.

The deficiency in cash receipts at our late Fair, as near as can now be ascertained, will amount to the sum of $6,000.

JOHN A. BUNTING, *Chairman.*

JOSEPH TORREY,
JAMES R. SMITH,
ISAAC V. BROWER,
WILLIAM EBBITT,
F. W. GEISSENHAINER, Jr.,
PETER B. MEAD,
BENEDICT LEWIS, Jr.,
WILLIAM HALL,
EDWIN SMITH,
W. B. LEONARD,
RICHARD M. HOE,
GEORGE S. RIGGS,
JOSEPH COWDIN,
JAMES VAN NORDEN,
ISAAC FRYER,
CLARKSON CROLIUS,
GEO C. MANN,
JOHN GRAY,
WM. A. WHITBECK,
ADONIRAM CHANDLER,
JOHN V. TARGEE.

REPORT

OF THE

COMMITTEE ON AGRICULTURE.

1853.

The Committee on Agriculture, to whom is referred the exhibition of cattle, the ploughing and spading matches, and the examination of farms, gardens and field crops, beg leave to

REPORT.

That the exhibition this year was held on the 19th, 20th and 21st days of October, at Hamilton square, a beautiful plot of ground of ten acres, granted by the corporation of the city of New-York for this express purpose.

Hamilton square is located between the Third and Fourth avenues, about four miles from the City Hall.

The committee were enabled to make the most ample and comfortable arrangement for the stock; suitable stalls, sheds and pens were erected, and the whole surrounded by a substantial fence. Notwithstanding arrangements had been made on an extended scale, the committee were compelled to extend the area at first contemplated.

Feed of the best quality was furnished on the ground at the cheapest rate, and a catalogue of the animals was prepared and printed at an early period of the exhibition.

The following rules and regulations were adopted by the committee, and the programme, as heretofore, was strictly adhered to.

1. All entries must be made in writing, and (if not previously sent to the secretary) delivered to the clerk on the ground, on the 17th or 18th day of October.

2. The entries must specify the breed, pedigree and age of the animal; by whom bred, the owner's name and residence.

3. The committee will not be responsible for the omission of any animal on the lists, if the two foregoing rules are not complied with.

4. All animals must be on the ground by 12 o'clock, M., on Wednesday, the 19th day of October, attended by their owners or keepers, for the inspection of the committee, unless for satisfactory reasons made known to the committee. Labels, stating the breed of the animals, owner's name and residence, number of entry, &c., will be appended to each animal as soon as located.

5. The judges on stock will meet at 10 o'clock, A. M., on Thursday, the 20th day of October, on the ground; organize and proceed immediately to the discharge of their several duties. On the completion of the awards, the committee will append to each prize animal a certificate designating the premium awarded.

6. No premium will be awarded to any animal deemed unworthy by the judges.

7. All owners of stock will be admitted to the exhibition on the presentation of a ticket, which they or the exhibitor will obtain from the clerk. They are requested to see that their animals are entered correctly.

8. Animals which are not on the ground by 12 o'clock, M., on the 19th day of October, or are removed before the close of the exhibition, without the permission of the committee, cannot receive a premium.

9. The rules in force at former fairs, excluding animals which have already received the highest award of the Institute, is abolished. Such animals may be exhibited, not as competitors for the highest premiums, but as extra stock, and receive a discretionary premium.

10. When cups or medals are awarded for agricultural premiums, the successful competitor can receive the value in other plate or the cash. Notice of any desired change must be given within four weeks after the close of the exhibition, otherwise the cups and medals will be prepared as awarded.

11. No auction sale of the cattle exhibited at the cattle show shall be had during the three days of the exhibition.

The 32d section of the by-laws of the Institute is in the following words, viz:

" No premium shall be awarded by the Board of Managers to any member of their Board, or to any of the Trustees, or to any member of any of the standing committees of the Institute, or any thing in lieu thereof."

The exhibition this year was unusually large, and the stock of a very superior quality, and it is doubtful whether a finer collection of animals were ever brought together. Gentlemen who take an active interest in exhibitions of this kind, pronounced this the finest that they had ever witnessed.

The judges on Short horns, in their report, say, "Your committee would here express the great satisfaction they have enjoyed in viewing so many first class animals as were here presented; and whilst we are well aware that the great superiority of nearly all the animals in competition, adds to the honors of the prize animals, yet we can assure the enterprising owners of most of the animals which were on this occasion less successful, that we consider them as really meritorious, and such as could not fail, with ordinary competition, to win honorable prizes."

Your committee saw many very superior Devons, which were of our native stock, that deserved to rank high in the scale with the imported; consisting of bulls, cows, oxen, steers, heifers, and calves, which have certainly shown to great advantage at our three last fairs. Mr. Case's Devon bull, was a model of his race.

These anunal gatherings have a tendency to cement the bond of union and good fellowship, in an eminent degree; opinions are

interchanged, the various breeds discussed, comparisons made, and much information distributed.

Few persons are aware of the good results of comparison in stock, as well as in every thing else. One who is isolated from the rest of the world, is forced to admire his own stock—for all have degrees of beauty and excellence. But the vast advantage of competition is felt for the first time by every breeder, and every amateur, upon entering the field, where large numbers of stock are met together. Now comes, for the first time, a truth to both, the best and the worst; the latter learns to imitate the breeder of the first rank, who himself is astonished at his own superiority.

The premiums do not stimulate breeders half so powerfully, as the ambition to excel.

We therefore, with increased earnestness, recommend the annual exhibitions of stock, to all who wish well to the land they live in. The glory of any land is the life, and the blessed vegetable wealth which sustains it. "Where," said the old Roman father, "there is much cattle, there is much wheat—aye, and these make men."

The committee take this opportunity, to return their sincere acknowledgments to the gentlemen who officiated as judges; many of whom came from distant States, who performed their arduous duties impartially, and, it is believed, that the awards predicated upon their reports, have given general satisfaction.

To the gentlemen of the board of agriculture, who assisted in the general arrangements, the committee are under obligations for their attention.

On account of the inclement state of the weather, on the last day, and the difficulty in reaching the ground, in consequence of the crowded state of the cars, and other conveyances, the receipts of the exhibition was not so large, as they otherwise would have been.

The following is a statement of the entries:

Horses, 150; but a number being received after the time specified by the rules, excluded a portion as competitors for premiums, 92 being the number so entered.

Horned cattle, 262. Sheep, 120. Swine, 85.

Poultry, 131 coops, numbering over 700 head, from the giant Shanghai to the pigmy Jungle-fowl. We saw several exhibitions of the black Spanish, the Poland, the Russian, the Bremen, the the Bantam, and the Native, that would excel any exhibition made in this or any other country. Much, your committee is satisfied, depends upon the feeding of fowls; they are naturally carnivorous. After the chickens have put forth their feathers, the parent and the young ought to have free access to rambling grounds. The cricket, the grasshopper, the fly, the earth worm, and the whole insect tribe, are the natural food of the dunghill fowl, and no animal does better when supplied with flesh, bread, and water. Only think of a million baskets of grasshoppers and army-worms converted into the delicate flesh of the fat capon, and the luscious fare of boiled eggs and custards.

The American Institute, in the early days of its existence, was the first society to offer premiums for the exhibition of fowls. Their doings were small indeed, but from the little acorn has come up the tall tree, and a most commendable spirit of rivalry now appears at our annual exhibitions, on the subject of poultry. The Shanghai fever is not the worst fever that ever existed, would that a fever was raised on many other agricultural subjects that are now neglected. Good housewifery, and a yard of poultry with full broods of chickens, are very near companions.

The premiums awarded, the list of judges, the reports of the judges on the ploughing and spading matches, and on farms and gardens, will be found in their appropriate places.

All of which is respectfully submitted.

DAVID BANKS,
R. S. LIVINGSTON,
THOMAS BELL,
NICHOLAS WYCKOFF,
JAS. DE PEYSTER,
Committee.

JOHN W. CHAMBERS, *Secretary.*

HORTICULTURAL REPORT

OF THE

TWENTY-SIXTH ANNUAL FAIR OF THE AMERICAN INSTITUTE,

OCTOBER, 1853.

In view of the untoward circumstances under which the 26th Annual Fair was held, it is a matter of no small gratification to me to be able to put upon record the evidences of another successful horticultural exhibition; successful, at least, in point of material shown.

While expressing my deep obligations to those friends at a distance, who contributed so many interesting and valuable articles, I cannot help wishing that a better feeling on this subject prevailed among ourselves. I would not here be misunderstood. The broad basis upon which the American Institute is founded, makes it right and proper, and even very desirable, that contributors to this department should come from all sections of the Union; but it is by no means flattering to our local pride that they should preponderate. I would by no means lose this class of contributors, for their importance can scarcely be overrated. They add much to the interest of the exhibition, and very much to its usefulness, by affording us the ready means of comparison, and by enabling us to take in at a glance nearly all the various products of the country. While conceding this degree of importance to this class of exhibitors, I must at the same time express my regret that the number among ourselves should be so comparatively small.

I attribute this much more to the want of a proper spirit than to the want of material; though I do not hesitate to say, in view of the position held by New-York in other respects, that even in the matter of material she is greatly wanting. This may be humiliating to our local pride, but it is better that the truth should be told.

There is another reason for pressing this subject. Agricultural and horticultural societies are springing up all over the country, and I rejoice to see it. They will create a local interest, which, to some extent, will necessarily deprive us of some of our exhibitors from a distance, especially if their fairs should be held about the same time as ours, which no doubt will be the case to a considerable extent. This cause, I think, has already begun to operate, and it therefore behooves us to understand this matter in time. If the example set by the Illinois State Agricultural Society were generally followed, the interest of these exhibitions would be greatly enhanced, and with benefit to all. What a grand thing it would be to have a national exhibition of fruits, flowers, plants, vegetables, and all the agricultural products of the country, including stock and poultry! For many years I have had such an idea in my head, and am only waiting for time to carry it out.

I will now make a few remarks on the general character of our exhibition, only stopping to notice particularly those objects which, from their novelty or usefulness, may seem to deserve some special notice. It is hardly possible to allude to every thing, and it is not necessary. The leading articles of merit may be seen by referring to the list of awards at the end of this report.

The show of fruit, though not on the whole quite as large as at some former exhibitions, was of good quality; but in this praise I cannot include the foreign grapes, of which there were only two entries, one of which was decidedly bad. I am the more surprised at this, since they were presented by one of the best growers in the country. They were poorly ripened, badly colored, and wrongly named, all owing, no doubt, to the carelessness of a new gardener. I must except, however, the Muscats, which were well colored and of good quality. A day or two

before the Fair closed, Mr. Fitch, of Fitchville, Conn., sent in a splendid lot of hot-house grapes, consisting of Muscat of Alexandria, Black Hamburgh, and Royal Spanish of Granada, the bunches large and beautifully colored. The latter is a large and splendid looking grape, quite unknown here, and I regret that it came so late that I got no opportunity of giving it a critical examination.

Of native grapes, the display was full. We had samples this year from two new vineyards, (Dr. Grant's, at Iona Island, and Dr. Fowler's, at East Fishkill,) both of them of first rate quality. Dr. Fowler's had a beautiful bloom, and were the best colored native grapes I have ever seen. Mr. Merritt, of Hart's Village, exhibited some Isabellas, the berries of which were of enormous size, but only of second quality. We had also the Diana grape from Messrs. Hovey, of Boston. The bunches are rather small and compact, without shoulders; the berries are not quite as large as the Catawba, and lighter colored, with a sweet and pleasant taste. It is evidently a seedling of the Catawba. While I am not prepared to say that it is equal to this fine grape, I am nevertheless of opinion that it is a valuable grape for certain localities.

It will ripen a good crop in localities where the Catawba (or even the Isabella) will not mature one year in ten. I must therefore regard it as an acquisition. We shall not see the Diana in its greatest perfection until after it shall have been submitted to long-continued and judicious culture. There is still much room for improvement in the native grape; but whether we are to depend upon chance, or well-directed efforts at hybridizing, for this improvement, remains to be seen. I am surprised that Mr. Longworth, the most skillful grower in the country, has not, among his hundreds of seedlings, succeeded in raising one superior to the Catawba for general culture.

Of apples and pears the display was very good. The season having been bad for apples, I was agreeably disappointed in seeing so many fine specimens. Mr. Bailey, of Plattsburgh, was the leading exhibitor, showing 62 varieties, all of them beautiful specimens of their kinds, having apparently been selected with

great care. A few days before the Fair closed, I received from the Illinois State Agricultural Society 82 varieties of apples, 4 varieties of pears, one of quince, one of grapes, and a noble specimen of the Osage orange, the whole having been selected from those exhibited at their State Fair. In acknowledging this act of courtesy, which I wish was more common, I am happy in being able to say that the whole collection was of unsurpassed excellence, and gave me an exalted idea of the capabilities of that State for growing fruit, as well as of the skill of her growers. Among the apples were a number of seedlings without name, several of which were of first-rate merit, and, with others from this collection, may now be seen in Mr. Glover's inimitable collection of model fruits.

Messrs. Hovey & Co., of Boston, were, as usual, the leading exhibitors of pears, showing 195 varieties. In this collection were several new pears of first quality, a description of which I had prepared for this report; but my memoranda having been loaned, and not yet returned, I must refer to them at another time.

Mr. John Brill exhibited some 50 varieties of pears, containing some very fine specimens. There were a number of small lots, with the usual display of quinces, &c. Mr. Fornet exhibited some pears under the name of Adelie Bergamotte, (said to be new,) which I can hardly be mistaken in calling Duchesse d'Angouleme. The same gentleman exhibited some fine specimens of Roi de Rome.

The show of flowers was a good one, embracing the usual varieties in season; the leading kinds, of course, being roses and dahlias. I missed much the mammoth show always heretofore made by Mr. George C. Thorburn. There is no one individual who can take his place; and the constancy and spirit with which he has for so many years contributed to the embellishment of the Horticultural Room, have earned for him a well-merited meed of praise. May he long live to enjoy it. The delicate and perishable nature of flowers, makes it necessary that they should be renewed at least three times a week; and too much praise can not

be bestowed upon those who so willingly do this, for four weeks in succession.

Our special exhibition of roses, dahlias, bouquets, &c., was very interesting, and brought out some very pretty things. We ought to have at least two special exhibitions, one for amateurs, and another for professional men. Before leaving this subject, I desire to return my thanks to Messrs. Cumings, Hogg, Boll, and others, for renewed supplies of choice flowers for exhibition.

The display of vegetables was large, and the competition spirited. There were to be seen the usual number of mammoth, or rather monster productions, such as squashes, pumpkins, beets, &c., and a potato from San José, California, weighing three pounds. I will here take occasion, once again, to enter my protest against these overgrown monsters. They ought to be strangled, every one of them, whether intended for cattle or the table. What is gained in size, is more than lost in quality. It ought to be our grand object to obtain the most and best *nutriment* from a given surface. You may grow large specimens, if you please, but do not overgrow them. A series of well-conducted experiments and analyses have proved conclusively, that roots of a medium size, contain far more nutriment than those of mammoth proportions; and this our common sense taught us years ago. Since we can grow a greater number of fair sized roots on an acre, the "monsters" are cultivated at a great loss. In the above experiments, the roots from an acre were in each instance weighed, and the analysis made with the utmost care; and the experiments having been made in different places by different individuals, with results almost precisely alike, their fairness can scarcely be questioned.

Dr. Bartlett exhibited a "Bermuda Yam potato, which does well in this country." It could hardly do otherwise, since it was only the common sweet potato, though a good one. Six heads of cauliflower from Messrs. Wyman, of West Cambridge, Mass., deserve special notice for their superior excellence. Mr. Bulkeley, of Williamstown, Mass., exhibited 172 varieties of beans, all properly named, the usefulness of which strongly impressed me at the time. With such a display before him for examination, there can be no excuse for a person not "knowing beans."

Last year I had to report a falling off in flour and meal, under the operation of an impracticable rule, which it was found necessary to abolish. I have the pleasure of stating, that this year the exhibition was well sustained. The new rule works well. It is satisfactory to exhibitors, and accomplishes all we could desire. The Messrs. Hecker, as usual, stood foremost both in plain and prepared flour. The latter has proved itself to be all that was claimed for it. There were several barrels of very superior flour, as well as samples of meal of very fine quality. In addition may be mentioned Messrs. Hecker's superb display of farina, hominy, samp, &c.

The show of grain was the best we have yet had. The wheat was remarkably fine and heavy, and the competitors numerous. The best samples were the Genesee. Rye and oats were also shown in considerable quantity, many samples being of very fine quality. A case containing five varieties of wheat, showing an improved method of branning by Mr. Davis, was an object of much attention. The case was divided into compartments; one row contained the five varieties of wheat; the next row, the wheat as branned; the third row, the bran itself. I must also mention, in this connection, a stand of wheat in the straw, containing thirteen varieties, named. This stand was an object of much interest, especially to the agricultural portion of our visitors. It is much to be wished that more objects of this kind were to be seen at all agricultural fairs. This stand was prepared by the Messrs. Hecker, and, with the specimen of branning above mentioned, has been placed in the rooms of the Institute for the benefit of the members of the Farmer's Club. Indian corn was not exhibited as largely as on some former occasions; but there were samples equal to any we have ever had. Three samples, consisting of White and Yellow Dent, and White Flint, were remarkably fine.

Butter and cheese were exhibited in considerable quantity; but in quality the samples were not as good as some we had before. I am convinced that exhibitors err greatly in the modes too frequently adopted in the carriage of their butter, such as packing the jars and pails in fresh-cut grass, wet hay, &c., and sometimes even filling up the tub itself with grass. The flavor of the butter

becomes greatly impaired. I have opened tubs a few hours afte their arrival, with the grass reeking like a hot-bed. At the numerous county fairs which I have attended, I scarcely remember a case of this kind; and why the practice should be adopted in sending butter to the Institute, I am at a loss to imagine. The sooner it is abandoned the better, for it can only lead to disappointment.

Of miscellaneous articles the name is legion; the most important may be found in the list of awards. A few of these, as well as some others, may be entitled to a passing notice here. A sample of solidified milk, presented by Mr. Abbatt, should claim some attention. The addition of warm water to this preparation converted it into very tolerable milk; but its value will depend, of course, upon its property of keeping a considerable length of time, and if it will so keep, I do not hesitate to say that it would be a most valuable addition to a ship's stores. Mr. Coffin exhibited samples of prepared potatoes; but this preparation, too, depends chiefly for its value upon a kind of test, which we, of course, could not apply. However pure and wholesome these preparations may be, they are of little value unless they will *keep* under a variety of circumstances; and in view of the many failures already before the public, it becomes us to speak with caution.

Mr. Haines presented a galvanic forcing glass, which, at his request, I have now under trial. It is a very handsome piece of work, and may prove to be of great utility. It is much to be wished that a great many other articles were submitted to a faithful trial, the only test of their merit and utility. The course generally pursued is little better than a farce.

Dr. Grant presented specimens of a new osier willow, (*Salix Beveridgii*,) lately discovered in Suffolk county, England. Cuttings six inches long were put down in April last, from which were taken the shoots exhibited, which were some eight feet in length. This willow may prove to be an acquisition.

The Shakers' Society, of South Groton, Mass., presented a variety of preparations, such as catsup, pumpkin flour, oatmeal, &c., of much excellence.

Mr. Lyman presented some horticultural implements, among which was a garden rake with an improved form of teeth, intended to prevent clogging, which seemed well calculated to accomplish the purpose.

There were several samples of native wine; none, however. comparable with that heretofore exhibited by Mr. Longworth, who justly stands at the head of this branch of domestic manufacture. A fair light wine was exhibited by Mr. Raymond, of Danbury, Conn., made from a seedling grape. Our room, however, is unfavorable for the exhibition of wines, the great heat frequently producing acetous fermentation, particularly when the wine is brought from a cool cellar, and the judges are thus prevented from giving an opinion. Much disappointment has resulted from the operation of this cause. Mrs. Grover, of New Brunswick, N. J., presented several samples of wines and sirups. The latter were excellent. Mr. Phelps exhibited his improved bee-hive, which well deserves its high character. A swarm of bees at work gave the hive additional interest.

Mr. Porter presented a sample of his tomato figs, a very pleasant and wholesome article. They are said to improve with age, and might be made an important branch of domestic industry. We ought to import fewer dried fruits, and make more at home. This is a subject which our farmers would do well to look to, as a source of profit. Mr. Barry, of the Horticulturist, (a very competent judge,) has pronounced Mr. McKay's Isabella raisins a superior article; and I have seen excellent prunes made from the frost plum, and have even made them myself, with almost no trouble at all. When care, skill, and the aids of science shall have been brought to bear fully on the subject of drying and preserving fruits, there can be little doubt that there will arise in our midst an important branch of domestic industry, which will not only supply our own wants, but furnish something for exportation abroad.

Before closing, I wish to say a few words to exhibitors, or to that portion of them who present articles for competition. They should by all means procure a copy of the premium list, read the *rules* carefully, and comply with them as strictly as may be, par-

ticularly in regard to quantity, number, and requisites. Neglect to do so not only causes disappointment to the exhibitor, but defeats one of the leading objects of the exhibition. The best articles of their kinds are not unfrequently disqualified by the judges for being wanting in quantity or number, these being the most usual deficiencies. Again, it is quite common for articles to be brought in after the judges have completed their labors. This, in some cases, looks bad; but it is not to be denied, that in an exhibition running over four weeks, it is very desirable to have articles brought in from time to time; and in regard to some things, it is absolutely necessary in order to keep up a show. This circumstance has made it imperative to award a number of special prizes, in order to accomplish the ends of justice to all. The show of flowers is necessarily based upon the renewal system, which might, perhaps, be judiciously extended to some other perishable articles.

One other thing. Exhibitors should remove their articles promptly the day after the Fair closes, and not, as is too frequently the case, call for some perishable thing a month afterward. A moment's reflection ought to convince any reasonable man that it is impossible to keep them. It has been a source of annoyance to me, to which nothing shall induce me to submit hereafter; and if I should again consent to take charge of this department, I shall give due notice that all articles remaining in the room more than one day after the Fair closes, will be entirely at the risk of the owners, unless upon especial request to take charge of them.

I have several times called attention to the necessity of increasing the value of the prizes offered in this department. Though they have been somewhat augmented, they are not yet what they ought to be in a great city like this; and they are not sufficiently discriminating. I know very well the prejudices which exist against this department; but they are unfounded and ungenerous. It is said, that in the mechanic arts an apprenticeship has to be served, and it requires years of thought and toil to perfect a machine, &c., as if the agriculturist and horticulturist did not have to serve an apprenticeship as well, and devote years of toil, and

care, and skill, in raising a fine pear, if you please, or even the ordinary products of the earth. If there is any virtue in this line of argument, it applies with increased force to the tiller of the soil. If there were no cotton, and flax, and wheat, and other articles furnished by the farmer's toil and skill, there would be no looms, spinning jennies, &c., and even no fleet of noble ships to carry our fame and commerce to the most distant parts of the world. The fact is, agriculture is the only true basis of national wealth and happiness, and should meet with proper encouragement from others besides farmers themselves, and from motives, too, above being characterized as sordid. Will the government at Washington condescend to bestow on this subject its most serious consideration, and give us that agricultural department so frequently recommended, and so imperatively demanded by the best interests of the country?

In conclusion, allow me to renew my best wishes for the success and prosperity of the Institute. May it outlast and rise above all adventitous influences whatsoever, and long live to encourage and extend its protecting care to the domestic industry of our beloved country.

All of which is respectfully submitted.

PETER B. MEAD,
Ch'n of Hort. Com.

REPORT OF THE COMMITTEE

ON

FARMS AND MARKET GARDENS.

FARM OF WILLIAM WATSON.

Your committee respectfully report, that on the 7th day of July they visited the farm of Wm. Watson, Esq., in the town of West Farms, Westchester county, N. Y. This farm is situated about 17 miles from the City Hall, New-York, on the easterly side of the Bronx river, and about two miles from the East river, and contains about 224 acres.

The soil is apparently composed of a debris of primitive and other rocks, and lies over a rock formation consisting of granite, gneiss, mica slate, primitive limestone and hornblende, and is of various depths, from three feet to fifty or more. The substratum of the farm would be called a hard-pan formation, over the surface, which is a delightful rolling one, pitching mostly to the east and south lay many green stone boulders. These boulders were common on York island, and have been broken up at great expense for Macadamizing the avenues. The same formation of boulders is found spread over a large portion of the southerly and westerly parts of Westchester county and Long Island. These rocks evidently were once detached from the Palisades on the Hudson river, and having been carried by drift over the surface, have now become globular, and are of all sizes, from a mere pebble to rocks of many hundred tons weight. They are known among the stone-breakers as niggerhead rocks, and are much used for laying stone walls. They are of a beautiful grass green, extremely hard and tenacious, but break easily with the

wedge and chisel. Mr. Watson has made a liberal use of these volcanic boulders to adorn his farm with fencing, and no rock serves a better purpose; it resists in an eminent degree the action of the weather, and when laid in cement forms a beautiful facing for avenues and enclosures of all kinds.

The soil of which Mr. Watson's farm is composed is considered hard to work, but when prepared by ploughing and sub-soiling, produces one of the richest and most endurable soils which belong to any formation.

Mr. Watson is a gentleman who emigrated from the north of Ireland to the United States about twenty years ago. He purchased the farm where he now resides some sixteen years since; he has converted it into an American paradise, ornamented with shrubbery, shade and fruit trees, flowers, and his crops grow with great health, vigor and luxuriance. He is a farmer, every inch of him, and a gentleman that sustains a full character for urbanity and industry—a perfect lord of his domain.

One of your committee who visited the farm of Mr. Watson made some memoranda at the time of the visit, which say:—"We found a cleanly and lovely estate, formed of one swell of land, bounded by the Bronx river for a mile and a half in length, to which vessels of 150 tons approach, perfectly fenced with heavy stone walls, the dwelling occupying the highest ground, outhouses on the north-west slope; the working men, like their master, excellent for their industry and ability. The table reminded us of the hospitality described by Dean Swift a hundred years ago in Ireland. It was furnished in abundance with salmon, poultry, vegetables and fruits. At the time we visited the farm, the season, with its early coolness and latterly with its splendid thunder storms and heat, had dressed the farm in all the perfect charms of verdure."

The crops of Mr. Watson consisted of sixty-eight acres of timothy, which would produce an average of two and a half tons per acre; his lawn of eleven acres laid down in clover and timothy; eight and a half acres of corn, which looked very

healthy and clean; eight and a half acres of black oats, and several fields of potatoes of the Mercer and Dykeman varieties.

Mr. Watson ploughs up his sod land in the fall for corn and potatoes; the former he plants in hills, three feet apart, putting a shovelful of barn-yard manure to each hill, hoes it once, and ploughs it twice both ways, and generally has a heavy crop. The potatoes he puts in drills, two feet, eight inches apart, and about twelve inches between the seed, the manure is spread in the drill, and the seed planted on it, and all covered with a double mould-board plow. He informed your committee, that he had tried potatoes in eight or ten different fields, and changed his seed two or three years, but is convinced there must be something unsuitable in the climate around him, that does not suit them, as he never has more than 100 bushels to the acre; the quantity of manure he uses is about 30 ox-cart loads to the acre. He generally follows his potato crop with oats; these he finds a sure crop; he sows the black oat, it answers best and produces heavily, both in grain and straw. Mr. Watson has imported three different kinds of oats, from Ireland, and sowed them separate with some of our Western oats, in the same field; the latter ripened quick, and produced nearly one-third more than either of the former. This he repeated from the same seed for three years, thinking the imported oat required to be acclimated, but is now convinced no oats answer so well as our native oat. He has done the same with potatoes; tried five or six different kinds, and planted them year after year, but feels satisfied that none answers so well as the native mercers. After the oats are gathered, he ploughs the stubble and gives it a light coat of manure, which he harrows, if short, and then sows timothy and clover in September, and generally cuts from two to three tons per acre. The first year the clover makes fine pasture in the fall for his young stock; the second year after it is laid down, he gives it a coat of guano, of about 200 lbs. to the acre; in the month of April, when the grass is about four inches high, and, if raining hard, he sows it on broadcast, and it pays for itself the first year. He repeats this every three years, and it seems to renew the grass, and yields a much heavier and cleaner crop, than any other kind of manure. Mr. Watson has tried different kinds of turnips, but there is

nothing, in his opinion, like bone manure for them. He takes a succession of crops; first corn, then potatoes, then oats, and then timothy; the latter lasts and yields well, for nine or ten years.

Mr. Watson commands the respect of all good men, for devoting so much time and industry to the cultivation of mother Earth. He contributes greatly and directly to the public good, and indirectly, by setting such an example to the welfare of his fellow men.

The stock, kept by Mr. Watson, are as follows:

1 thorough bred mare, having four colts by "Trustee."
15 Shetland ponies. (Stallions, mares and colts.)
15 head of Ayrshire cattle.
3 head of short horns.
55 sheep—Leicesters and Southdowns. (The lambs were a cross between the two breeds.)
33 pure Suffolk swine.

Your committee unanimously award to Mr. Watson the premium of a silver cup, of the value of $50, for the best cultivated farm of 100 acres.

ALANSON NASH,
THOS. BELL,
N. WYCKOFF,
DAVID BANKS,
Committee.

JOHN W. CHAMBERS, *Secretary.*

FARM OF ASHER H. HUBBARD.

Your committee visited this farm on the 13th day of July, 1853. It is situated in the town of Flatlands, on the south-easterly side of Long Island, about four miles from Coney Island and Jamaica Bay; it lies on both sides of the road running from Brooklyn to the southern shore of the island.

The soil in all this region is comparatively of a recent formation. First, at the surface, is a bed of yellow loam, six to eight feet deep; next, a stratum of oceanic clay approaching to marl; under this is quicksand and gravel, pure water is found in wells sixteen feet deep, every inch of this land is susceptible of cultivation, no rocks, no ledges, no stone or broken ground is seen within several miles of Mr. Hubbard's farm, the plough can be driven thirty inches deep whenever the owner desires it, with manuring, such a soil as this is capable of being converted into a fruitful garden.

The farm consists of sixty-three acres, thirty acres of which were in early potatoes, these are taken up in July and August and sent to the New-York market, eight miles distant, and sell at from 60 cents to $1.50 per bushel.

After the potatoes are cleared off, Mr. Hubbard grows a second crop upon this ground, of drumhead cabbage, turnips, and carrots; he set out over 45,000 plants of cabbage the last season.

His early crop of potatoes yields him on an average 175 bushels per acre, the manuring and cultivation cost him about $50 per acre, seed $25, the balance clear profit, deducting rent value for his land.

He raised the last season eight acres of Mediterranean wheat, seven acres of Indian corn, seven acres of timothy, and eight acres of timothy and clover. Your committee were also shown eleven acres of late potatoes, planted in June, for the fall market.

Mr. Hubbard's is a money-making farm, easy to cultivate; but your committee regret to say, that, in his hurry to get the potatoes to market, he has neglected other portions of his crops.

He sold the last season from his farm $3,937 worth of potatoes alone.

The committee award to Mr. Hubbard the silver cup for the best farm of not less than 50 acres.

ALANSON NASH,
DAVID BANKS,
THOMAS BELL,
NICHOLAS WYCKOFF,
Committee.

John W. Chambers, *Secretary.*

FARM OF CHAS. DENNISON.

On the invitation of Charles Dennison, Esq., the proprietor of Longwood Park, a committee from the Board of Agriculture of the American Institute visited this farm on the 4th day of June, 1853. It is situated in the township of West Farms, Westchester Co., about two miles east of the railroad depot, at Mott Haven. The farm consists of about eighty acres, fifty of which are under cultivation. The original composition of the soil appears to have been stone, clay, and loam. The entire surface of the land is undulating, with a general descent towards the south.

The domicil is a very neat structure, two stories high, and fifty feet square upon the ground; is placed upon the highest eminence facing to the north. From the piazza in the rear a pleasant lawn presents itself, having a gradual declivity towards Long Island Sound, distant three-fourths of a mile; a part of the sound, with Flushing bay, Riker's Island, and the Two Brothers, are in view, forming a beautiful landscape.

This farm came into the possession of its present owner about twelve years since, at which time it was in a very low state of cultivation. Much labor and expense have been bestowed to resuscitate and improve it, and at the present time, with the exception of a vegetable garden, it is used for root crops, grass, and grazing. The proprietor keeps five horses and twelve head of horned cattle, and exclusive of the necessary feed for the stock,

there were fifty tons of hay sold off the farm last year. The exemption of the fields from weeds, and the uniform cleanliness of all parts of the farm in this particular, is highly creditable, and worthy of notice.

The fields are interspersed with small groves and clusters of forest trees, of great variety and beauty; among them some stately trees present themselves, which, from their size and venerable appearance, we judged to have maintained their position from the period when the native forest covered the soil. The white pine is here and there seen flourishing in luxuriance and beauty. We noticed some specimens of the black or purple beech, (*Fagus sylvatica,*) a forest tree of Northern Europe; the nuts, (or mast) are triangular, in a cupule of the nature of an acorn cup, but of a different shape, and covering the nut all over. The purple and copper beeches seen in plantations, are seedling varieties of the Fagus sylvatica, or forest beech. We noticed in our walks over the farm, some two and a half to three miles of stone fence, mostly from green stone boulders, so neatly faced and laid up, as to elicit the admiration of our committee.

We are gratified to say that the stables and other out-buildings were arranged in the best order, embracing the recent improvements for the proper saving of manures. The soil has been deeply prepared and fully fertilized. Mr. Dennison informed us that the fine crops of grass, dark green pastures, and large root crops, were produced by the use of Mapes' improved superphosphate of lime; and that, as compared with the same money value of guano used on adjacent fields, it produced an excess of crop over the guano, of more than the cost of this manure.

The committee cannot withhold the meed of praise from this farm and its enterprising proprietor, who steals an occasional hour from his multifarious pursuits, to prove to our agricultural community, that the application of science to agriculture is sure to compensate for the necessary pains taking.

The committee on their examination of this farm were highly pleased to be accompanied by Gen. Chandler, the corresponding secretary of the Institute; Hon. Henry Meigs, the secretary of the

Farmers' Club; Prof. Mapes, editor of the Working Farmer; Lewis G. Morris, president of the New-York State Agricultural Society; and Prof. John Wilson, of the Royal College of Cirencester, Eng., whose intelligence and familiarity with agricultural pursuits, very much enhanced the pleasure of our visit.

ALANSON NASH,
NICHOLAS WYCKOFF,
DAVID BANKS,
THOS. BELL,
Committee.

JOHN W. CHAMBERS, *Secretary.*

MARKET GARDEN OF WILLIAM BAITY.

Your committee respectfully report that on the 13th day of September they visited the market garden of Mr. Wm. Baity, owned by Col. Lewis Morris.

For a particular description of this farm your committee will refer to the volume of Transactions for 1852, page 54..

They have received the following communication from Mr. Baity, which they embody in the report:

Morrisania, January, 12, 1854.

To the Committee on Farms, Gardens, &c.,
of the American Institute.

GENTLEMEN: In compliance with the rule which requires the successful competitor before receiving a premium "to give an accurate description of the process in preparing the soil, including the quantity and quality of manure applied, and in raising the crop, and also the expense and product of the crop, with a view of showing accurately the profit of cultivation?" I beg leave to submit the following in relation to that part of the Morrisania farm, cultivated as a market garden by Mr. Wm. Baity, for which the premium for the best market garden was awarded last fall.

The quantity of land cultivated as a market garden is about fifty acres. The course pursued in working and preparing the

ground for planting is that usually adopted; care is taken to work deep, and plough the manure well in. The hot beds are prepared in the usual mode about the middle of January; the seed sown in them about the 1st of February are fit to transplant as soon as the season admits, they are then thinned out by transplanting, the plants of one bed into twenty others, say five inches apart for tomatoes and egg plants.

There is used on the place besides the manure made by six horses and thirty head of cattle, the stock of the farm, that made by a stable of 200 horses, at a cost of $800 per annum; this is carefully preserved and worked before used, and when deemed fit is spread and ploughed in.

The sales of the produce of this garden amounted last year to $6,658; the cost of labor, including board of men and expense of sending to market for the same time is estimated at $2,750.

As a detailed description of this farm was given last year, with the crops raised and sold from it, I am not aware that any further particulars can be profitably added to the above.

Yours, very respectfully,

"H. M. MORRIS."

The Committee award to Mr. Baity the silver cup for the best market garden.

ALANSON NASH,
DAVID BANKS,
NICHOLAS WYCKOFF,
JAS. DE PEYSTER,
THOMAS BELL,
Committee.

JOHN W. CHAMBERS, *Secretary.*

MARKET GARDEN OF HENRY KENZIE.

Your committee respectfully report, that on the 16th day of July they visited the market garden of Mr. Henry Kenzie, containing four acres, situated at Newtown, L. I., about five miles from Brooklyn.

The soil of this locality belongs to the primitive formation, the water runs west towards the East river from this ground, which is high, and the earth is susceptible of an easy and fertile cultivation. Perhaps no spot could be better adapted for a market garden than the one of Mr. Kenzie; he has improved it to much advantage, and probably no garden is more productive for the amount of labor and capital bestowed upon it.

Mr. Kenzie has furnished your committee with the cash income and expenditures for the past year, which are hereunto subjoined. They are large indeed, for so small a piece of land. It will be observed that the land has produced two and three crops.

Sales from the market garden of Mr, Henry Kenzie in 1853, deducting the expenses of marketing.

$1\frac{3}{4}$	acres of	radishes,	\$205 00
$1\frac{1}{8}$	do	salads,	297 00
$\frac{1}{8}$	do	chicory,	85 00
$\frac{1}{4}$	do	early cabbage,	75 00
$\frac{3}{4}$	do	carrots,	172 00
1	do	beets,	236 00
$1\frac{1}{8}$	do	spinach,	204 00
$\frac{1}{4}$	do	potatoes,	32 00
$\frac{5}{8}$	do	beans,	104 00
$\frac{1}{4}$	do	parsley,	128 00
$\frac{1}{8}$	do	leeks,	77 00
$\frac{1}{8}$	do	celery,	53 00
$\frac{1}{4}$	do	cabbage turnip,	86 00
$\frac{1}{4}$	do	felicus,	109 00
$\frac{1}{4}$	do	kale,	108 00
$\frac{1}{8}$	do	onions,	35 00
$\frac{1}{2}$	do	rape,	108 00
$\frac{1}{8}$	do	ruta baga,	12 00
$\frac{1}{8}$	do	white turnip,	11 00
$\frac{1}{8}$	do	red cabbage,	35 00
$\frac{1}{8}$	do	savoy,	41 00
$\frac{1}{4}$	do	parsnips,	73 00
Proceed of		hot beds,	129 00
		Total sales,	\$2,415 00

Expenses,

330 one-horse loads of manure, at $62\frac{1}{2}$c.,	$206 25
Wages of one man, 1 year,	96 00
48 days' wages, at 50c.,	24 00
Feed for horse and cow,	148 00
Blacksmith and wheelright's bills,	23 00
Interest on the value of the garden, $1,000 per acre, at 7 per cent.,	280 00
	$777 25
	$1,637 75

Much credit is due to Mr. Kenzie for the enterprise and industry shown by him. Much of the labor is done by his own family. He is a German by birth, and has learned his business since his arrival in America.

The Hon. Henry Meigs, Secretary of the Farmer's Club, accompanied your committee in the examination of this garden.

Your committee unanimously award Mr. Kenzie a silver cup, for the second best market garden.

ALANSON NASH,
DAVID BANKS,
NICHOLAS WYCKOFF,
THOMAS BELL,
Committee.

John W. Chambers, *Secretary.*

REPORT OF THE JUDGES ON TESTING PLOUGHS. 1852.

The Judges appointed by the Board of Agriculture of the American Institute beg leave to report,

That on the morning of the 9th of October, they, together with quite a number of gentlemen from the Institute, proceeded to Nyack, Rockland county, N. Y., the place designated for the ploughing match, spading match, and testing of ploughs, and that ten ploughs were entered for ten testings, all of which were of superior mould, workmanship, strength and utility combined, and it was with some difficulty that your committee could decide to whom the premiums should be awarded; but your committee decide that the first premium be awarded to John Moore's plough, No. 19½, and that the second premium be awarded to B. Myer's plough F.

All of which is respectfully submitted.

RALPH HALL,
D. K. SHERWOOD,
A. M. SUYDAM,
Judges.

Nyack, Oct. 9, 1852.

REPORT OF THE JUDGES ON PLOUGHING.

1852.

We, the undersigned, Judges on Ploughing, appointed by the Board of Agriculture of the American Institute of the city of New-York, October, 1852, beg leave to report,

The place selected for ploughing was at Nyack, Rockland Co., N. Y. The competitors numbered ten. The work was admirably done, showing an improvement in the art so essential to farmers.

After a careful inspection we decide that

The best is No. 5. Ploughman, Joseph Swannell, New-York city; plough No. 73½; entered by Messrs. Ruggles, Nourse & Mason, Worcester, Mass.

The second best is No. 6. Ploughman, Augustus Carlton, Sutton, Worcester Co., Mass.

The third best is No. 3. Ploughman, Asa B. Munn, Orange, N. J.; plough No. 9½ F.; entered by B. Myer, Newark, N. J.

The whole ploughing was done in a masterly style.

NICHOLAS WYCKOFF,
JOHN M. FERRIER,
A. O. HOUGHTON,
Judges.

Nyack, Oct. 9, 1852.

REPORT OF THE JUDGES ON SPADING.

1852.

The committee on the spading match, held at Nyack, in the county of Rockland, on the 9th day of October, instant, respectfully ask leave to report:

Your committee proceeded to the town of Nyack, on the 9th day of October instant, to superintend the spading match of the American Institute, of 1852, in conjunction with the Rockland County Agricultural Society. On arriving, by the steamboat, at Rockland County, your committee, in conjunction with the committee on the ploughing match and the testing of ploughs, and the Agricultural Committee of the Institute, were met at the landing by the president and members of the Rockland Agricultural Society, accompanied by a large number of inhabitants of Rockland County, who had assembled to witness the agricultural fair of this county, being held at Nyack at the same time. They were welcomed by the president of the society, A. B. Conger and Hugh Maxwell. Having been addressed by Hugh Maxwell, in a very happy speech, they adjourned to the grounds, where the spading match was first in order. These grounds were laid off in lots of 20 feet by 10 feet. The spading was to be for spring or garden work, and not less than 10 inches deep; the time allowed to do the work, one hour. The premiums offered, were, for the best spading of the ground an any lot, a silver cup, worth $10; for the second best spading, a silver cup, worth $8; for the third best, a silver medal, valued $5. The grounds being ready, were then surrounded by a line of white tape, so that each lot was distinctly marked. The whole was inclosed by stakes and a line, so that not less than 6 feet border was carried around the whole

of the lots to be spaded. There were four competitors, who presented themselves for spading.

Thomas Daly, of Nyack, ...	who drew on ballot,	lot No. 1.
John Leidenburgher, of Nyack;	do	lot No. 2.
Archibald Henderson, of Newtown, L. I.	do	lot No. 3.
James Maloney, of Nyack,	do	lot No 4.

The spading commenced at 12 and 37 min. The ground was a loam or mixture of clay and vegetable soil. Archibald Henderson finished his work in 52 min., Thomas Daly in 50 min., James Maloney in 55 min., John Leidenburgher worked about 30 min., and abandoned his lot of ground. At the conclusion, the committee who had charge of the spading, came to the conclusion, that Archibald Henderson was entitled to the first premium, but this was by a majority report. The minority of the committee were in favor of James Maloney, but being voted down, the second premium was unanimously awarded to him. The committee were unanimous in awarding Thomas Daly the third premium. The spading was exceedingly well done, and the committee express a regret, that no more competitors appeared on the ground from Rockland County; two additional competitors appeared, after the spading had commenced, which necessarily involved the rejection of their applications. The committee regret to have learned, that a report had been circulated, that the American Institute would send experienced spaders on the ground, from New-York city; whereas your committee say and report, that nothing could be more foreign to their wishes and intentions. They would not in the remotest degree encourage any such plan or proceeding. They wished, that the competitors, as far as practicable, should have come from the county in which the society held their fair. This would encourage the people of each county, to turn out their strongest and most skilful men, on the occasion of their annual fairs.

The American Institute were at much expense in publishing their programme of proceedings in regard to the ploughing and spading matches, and the testing of ploughs, to be held in conjunction with the Fair of the Rockland County Agricultural So-

ciety, on the 9th of October, 1852. The American Institute do not mingle with the question of competition, and utterly disclaim any design of bringing forward any individual at their ploughing and spading matches and testing of ploughs. They would prefer, all other things being equal, that the inhabitants of the county in which the ploughing and spading matches are held, should receive the premiums. The spading match brought a very large number of people on the ground to witness its performances; ladies and children also presented themselves. All were apparently highly delighted with the performances. The committee saw no rude conduct or misbehavior of any one—it was a feast of reason—it was a strife in the arts of peace, and the fact that the Rockland County Agricultural Society prohibited the sale of ardent spirits on their grounds during the fair, contributed much to the harmony and the enjoyment of the occasion. After the match was concluded and the premiums announced, the several committees of the American Institute were invited to partake of a dinner, which was enjoyed in a delightful hospitality, given by the Rockland Society.

Your committee would beg leave to remark, that from what they saw of the soil and natural productions of Rockland county at this fair, it appeared to be one of the first agricultural counties in the state. All of which is respectfully submitted.

ALANSON NASH,
ABRAHAM TURNURE,
THOMAS WILLIAMS,
Committee on the Spading Match.

American Institute Rooms,
New-York, Oct. 12, 1852.

REPORT OF THE JUDGES ON PLOUGHING, 1853.

The committee appointed by the American Institute to superintend the Ploughing Match, respectfully report,

That they attended at the time and place mentioned in the programme of the American Institute, at Frye's hotel, in the town of Flatbush, on the plank road to Coney Island, on the 11th day of October, 1853.

That the number of competitors were nine, and that the names of those successful were

Joseph Swannell, of the city of New-York, who is entitled to the first premium, a silver cup, of the value of $15.

Bernard Lazalere, of Fort Hamilton, L. I., is entitled to the second premium, a silver cup, of the value of $10.

Asa B. Munn, of Orange, N. J., is entitled to the third premium, a silver medal.

Your committee could go into detail and give the names of each of the competitors, with detailed remarks, but they will confine themselves to a few observations.

The work was generally of a superior character. Many new ploughs of an ingenious construction came on to the ground. The teams were horses altogther. The ground, however, although level, and free from stones, was very dry and hard, which seriously retarded the operations of the ploughing.

Yonr committee were well pleased with the operations of a Michigan plough, which was brought on to the ground and held by Mr. Isaac Crispell, of Esopus, Ulster county, N. Y.

This plough operated with great advantage both as a plough and a subsoiler, and when the plough turned over the sward it also brought up a subsoil which was thrown over the sward and covered it in some inches, leaving the land ready for sowing or planting, without further breaking. Economy and utility both combine in using the Michigan plough, when the land is suitable for its operations.

All of which is respectfully submitted.

NICHOLAS WYCKOFF,
JOHN M. FERRIER,
LAWRENS REEVE,
Committee.

Flatbush, Kings Co., L. I, Oct. 11, 1853.

REPORT OF THE JUDGES ON SPADING, 1853.

The committee appointed by the American Institute to superintend the Spading Match held at Flatbush, L. I., on the plank road to Coney Island, on the land of Mr. A. D. Frye, respectfully report,

That they attended said spading match, at the time and place designated, on the 11th day of Oct., 1853.

The spading commenced at 12 o'clock noon, and was continued one hour. Six competitors entered the list for premiums. The ground was divided into six lots, in quantity according to the programme.

In casting for lots for the ground, Wm. Britton took No. 1; John Dinning No. 2; John Andrews No. 3; Richard States No. 4; Archibald Henderson No. 5; Patrick Fitzsimmons No. 6.

The work of spading commenced on the ground amidst a large number of spectators; while the work was going on your committee carefully superintended the same.

The spaders all did their work well, and within the hour allotted. If any fault was to be found, it was on the ground that the spaders were too ambitious, and operated too rapidly; some of the spaders did their work full ten minutes before their time expired.

Your committee looked over the work after the spaders had left the ground, and examined it carefully. They were of the unanimous opinion that Wm. Britton performed the work the most carefully, and dressed it up the most neatly, and it is entitled to the first premium, a silver cup of the value of $10; that ohn Dinning is entitled to the second premium, a silver cup of

the value of $8, and that Patrick Fitzsimmons is entitled to the third premium, a silver medal.

Your committee were well pleased with the manner in which the whole work was done by all the competitors, and they would recommend that the three competitors who did not take the premiums awarded to them by the American Institute, should each be presented with a volume of the Transactions of the American Institute, as a memento of well doing.

All of which is respectfully submitted,

ALANSON NASH,
WM. BERGEN,
JAS. G. STRIKER,
THOS. WILLIAMS, Jr.,
J. S. SKINNER,
Committee.

Flatbush, Kings Co., N. Y., Oct. 11, 1853.

REPORT OF THE COMMITTEE

ON

ARTS, SCIENCE, AND MANUFACTURES,

ON HAMILTON'S MACHINE FOR PREPARING SHIP TIMBER.

The committee on arts, science and manufactures of the American Institute, respectfully

REPORT:

That they have visited and examined the patent machine for preparing ship timber, the invention of which is claimed by James Hamilton, Esq., and which is now in operation in this city. They have also seen it in action, and have witnessed the sawing of curved timber to bevels of great variety and complexity.

Your committee regard this machine not only as valuable from its capability for substituting machinery driven by steam for manual labor of the most costly description, but as highly important in the art of ship building, in consequence of its doing its work not only with much greater despatch, but with vastly greater accuracy than can be attained by hand sawing. Greater accuracy and perfection of workmanship are thus attained, along with a great saving in the cost.

By recent improvements in the plan of the machine the two opposite sides of the timber can be sawed to their intended form at the same time; and so simple is the plan, and so obvious the mode of management, that laborers of ordinary intelligence may speedily acquire all the skill that is required for working it.

Considering the vast importance of the art to which it may be rendered subservient, and the great ingenuity and simplicity of the machine, your committee consider this invention as among the most valuable that have ever been submitted to their consideration.

JAS. RENWICK,
THOS. B. STILLMAN,
JAS. J. MAPES.

New-York, Feb. 6th, 1854.

DEATH OF

GENERAL JAMES TALLMADGE,

PRESIDENT OF THE AMERICAN INSTITUTE.

General Tallmadge arrived in New-York on the morning of the 28th Sept., 1853, from his country residence in Dutchess county, and passed an hour or more at the rooms of the Institute, in conversation with the officers and members who were present. One of the objects of his visit to the city at this time was, as had for years been his custom, to lend his aid and counsel relative to the then approaching Fair, for which active preparations were in progress. He appeared in much better health than usual, which was remarked to him by one present, to which he replied, that he had passed a very comfortable summer, and was thankful to find himself free from several rheumatic affections which had previously afflicted him. On the next day, (29th,) shortly after 3 o'clock P. M., a rumor reached us of the sudden demise of the General at Metropolitan Hotel, to which place a messenger was immediately despatched, who returned with the following statement of facts: General Tallmadge had passed the morning at the Crystal Palace in company with some friends, with apparent health and uncommon cheerfulness. Returning to his hotel between two and three o'clock, he retired to his room, when his bell immediately rang; the servant on reaching it, found him in a state of insensibility, and he expired before any aid could be summoned. The immediate cause of his death was apoplexy, of which the General had before experienced attacks. Thus, suddenly departed a lofty spirit, ripe and full of years, yet still in the midst of usefulness, from among his fellow men. A. C.

PROCEEDINGS OF THE INSTITUTE RELATIVE TO THE DEATH OF PRESIDENT TALLMADGE.

A meeting of members was held at the Repository, 351 Broadway, on the 30th of September. The rostrum and the wall in the rear of it, were draped with mourning. Dr. D. M. Reese, one of the vice-presidents, was called to the chair. In stating the object of the meeting he remaked:

"A solemn and impressive event has called us together, of which these habiliments of mourning are but the outward sign. General James Tallmadge, long the worthy occupant of this chair as the chosen President of the American Institute, has suddenly been taken from us by death. Of General Tallmadge it may fitly be said, that he was venerable in years and full of honors—distinguished as a patriot and a philanthropist; eminently characterised by public spirit and private virtue, he was conspicuous for his refined and elegant manners. His long life has been devoted to the service of the State and general government; to the advancement of literature, science, art, education and morals, and to the promotion of every good cause which could do honor to his country, and benefit mankind. Verily we are bereaved; for in the lamented death of General Tallmadge, the American Institute would fain be among the chief of mourners over his tomb, for to the service of this Institution he devoted the maturity of his life. By his wise counsels and eloquent addresses, and by the influence of his exalted character and example, we are indebted for much of the usefulness of our Institution. It is fit and proper, therefore, that we should take measures to express our high estimate of the character and worth of our late president, and communicate to his family and the public, our appreciation of his loss."

Mr. Livingston offerred the following resolutions which were unanimously adopted:

Resolved, That the memory of our late president will be forever cherished by the Institute, which in its infancy he adopted as his greatest favorite among the institutions of our country, and continued to do his utmost for, up to the moment of his death. The

Institute has found him without reproach, an unwavering, firm friend, honest, honorable, intelligent, and its eloquent advocate and defender. We glory in the example which he has established in the presidential chair; an example which will long endure for the benefit of his successors. Posterity will look back to his official course with praise.

Resolved, That our late president has ever been the friend of the American Institute, and of American industry. Regardless of all opposition, he firmly and successfully persevered in the cause he cherished. Elected to the presidency, he gave to its duties and objects his incessant care, and to its members the high example of an honest and honorable name. The General was induced to become president of the Institute in 1832, and he has so continued to be with the exception of two years, when he peremptorily declined a reëlection. He was again elected, notwithstanding his reiterated refusal, and has since been reëlected unanimously.

Resolved, That the members of this Institute have habitually looked to our late venerable president for advice and counsel in all that affected its permanent interests; and during a long period, his wisdom, his paternal counsel, and his unaffected friendships, have been the real beacon lights which have guided it onward in prosperity and usefulness.

Resolved, That our unfeigned regret at a separation from one so much esteemed, finds consolation in a knowledge of the purity of his character, and his deep attachment to the principles we have aimed to establish.

Resolved, That as a mark of respect for the dead, the members of the Institute will attend his funeral, and wear the usual badge of mourning; and that a copy of these resolutions be transmitted to his family.

On rising to second the resolutions, Gen. Chandler remarked, that he felt deeply impressed with the truthfulness of the remarks of our presiding officer, and the sentiments embodied in the resolutions which are before us. I consider it a fortunate circum-

stance for our Institution that its members have appreciated the force of the character of our late president, and availed themselves of its influence for so long a period; and I am persuaded that whatever we may do in token of our regard for the memory of the deceased, will originate in feelings of entire sincerity.

A. C.

THE FUNERAL.

On the afternoon of Saturday, Oct. 1st, the last token of respect was paid to the remains of General James Tallmadge. The coffin containing them had been placed in Grace church, where the relatives and friends of the deceased assembled, and the ceremony of the burial service, according to the liturgy of the Protestant Episcopal church, took place, commencing with a voluntary, performed on the organ. The Rev. Dr. Taylor then read the prayers and lesson, as laid down in the ritual, in a very impressive manner; the following hymn was beautifully sung by the choir of the church. The principal vocalist, Mrs. Julia Bodstein, formerly Miss Northall; contralto, Miss Dresler; tenor, Mr. Schneider; bass, Mr. Myer:

188TH HYMN. (C. M.)

DEATH.

Job, chap. xiv, 1st, 2d, 5th and 6th verses.

Few are thy days, and full of wo,
O, man, of woman born!
Thy doom is written — "Dust thou art,
To dust thou shalt return."

Behold the emblem of thy state,
In flowers that bloom and die,
Or in the shadow's fleeting form,
That mocks the gazer's eye.

Determin'd are the days that fly
Successive o'er thy head;
The number'd hour is on the wing,
That lays thee with the dead.

Great God! afflict not, in thy wrath,
The short allotted span
That bounds the few and weary days
Of pilgrimage to man.

The choir also chanted a portion of the service. The benediction was recited by the Rev. Dr. Mathews. A large concourse of the relatives and friends of the deceased attended at the church, although the day was very inclement.

The remains of the deceased were then followed to the grave, in the New-York Marble Cemetery, on the 2d avenue, by the relatives and friends; the members of the American Institute wearing a badge of mourning on the left arm. The following gentlemen acted as pall-bearers: George Griswold, Esq., Judge Nelson, Judge Betts, Judge Oakley, Hon. Luther Bradish, W. B. Crosby, Esq., Aaron Vail, Esq., and Gen. Chandler. The physicians of the deceased, Drs. Pratt, Peters and Vanderberg, were also present. The body was interred with the usual solemnities. A plate on the coffin bore the following inscription:

JAMES TALLMADGE,
Born January 20, 1778,
Died Sept. 29, 1853.

A. C.

BIOGRAPHICAL SKETCH OF

JAMES TALLMADGE, LL. D.,

LATE PRESIDENT OF THE AMERICAN INSTITUTE.

[The following notice was prepared by a member of the American Institute, and published in Hunt's Merchants' Magazine, March, 1850. It has been revised by the author for insertion in the Transactions of the Institute, for 1853.]

General James Tallmadge was born January 20, 1778, in the town of Stanford, Dutchess County, New-York. His father, James Tallmadge, was born in Sharon, Ct., 1743, and in service in the revolutionary army, was an officer at the battle of Saratoga, and was wounded in that engagement. He was a son of Thomas Tallmadge, known in Massachusetts in 1630. Gen. James Tallmadge, the younger, graduated at Brown University, Providence, R. I., in 1798, and soon after commenced the study of law, as a profession, and pursued the practice of it for a number of years, in Dutchess County. He was for a while, Secretary to Gov. George Clinton, and acted with the political party in the State of New-York, of which Gov. G. Clinton was the leader. He supported the war measures of 1812, and engaged in the service, by taking command of part of the force raised for the defence of New-York city. In 1817 he was returned to the 15th congress of the United States, from his native county. His private pursuits induced him to decline a re-election.

From the adoption of the constitution, in 1787, no question connected with the restriction of slavery in any new State, had presented itself to congress, until February, 1819, when the agitation arose in regard to the admission of Missouri. The great

question discussed in this debate, was to prevent the extension of slavery, in territory where it had not existed; and at the same time to leave it as a matter to be regulated by State authority, where it had been already introduced. General Tallmadge sustained, in a speech of great force and clearness, his proposition to amend the bill for the admission of Missouri, restricting the extension of slavery; and he also seconded and advocated the motion of the delegate from Alabama, for the admission of that State, without the restriction. In support of this position he said: "the principles he had avowed in the debate on the Missouri bill, would guide his course on this bill. That slavery in the old States which formed the Constitution, was a question of State authority, and was to be regulated by the compromises made in the Constitution. That, in cases of newly acquired territory, not inhabited, he considered it an open question for legislation, on the expediency of the terms and conditions of admission; that, in the case of Alabama, it was territory, since acquired by purchase; it was a settled country, and with a dense population, with slavery existing before the purchase. That it would be a violation of the rights of property, and bad faith to the inhabitants and settlers, to add to Alabama the restriction which he had moved, and which was now under discussion on the Missouri bill. He should not, therefore, move such condition to the Alabama bill, and he believed no such condition would be moved." The question was carried without opposition or division.

General Tallmadge acquired popularity by the independent and manly course pursued by him on this subject; and, whether in public or private life, has continued to enjoy the confidence and respect of his fellow citizens. He was chosen a delegate to the convention for altering the Constitution of his native State, in 1821—was a member of the Legislature in 1824—and bore a leading part in the great contest of that session, in favor of submitting the choice of presidential electors to the people; which measure was carried in the House, and afterwards defeated in the Senate, by the vote of what was then called "the immortal seventeen." It was during this session of the Legislature that the administration of the General Government adopted measures, and appointed officers, for the collection of tonnage duties on the ca-

nal from Buffalo to Albany, which had just then been completed, and was coming into active business operations. General Tallmadge submitted a resolution to the Legislature, strongly dissenting from the collection of such duties; and among other things declaring that the State, with a due regard to public justice, could not acquiesce in such a measure, and ought to resist it as "another Boston tea tax." The resolution was adopted by a unanimous vote, and all further endeavors to collect tonnage duties on the canal, were from that time discontinued.

General Tallmadge was elected Lieut. Governor of the State in 1825, by a very large vote, having received a majority of 32,000 over the opposing candidate; this was the largest majority that has at any time been given in the State. He was again elected a member of the Convention for altering the Constitution of the State in 1846, and bore an able and efficient part in all the duties of that important Convention.

He was one of the founders of the University in the city of New York, and served as president of its council for many years. During his absence from the United States in 1841, the degree of LL. D. was conferred upon him by that institution. The address delivered on the completion of the University edifice, and published by the council, shows the wisdom and liberality of his views on the important subject of education and letters.

In 1838 he came to reside in the city of New-York. The American Institute, an association incorporated for the encouragement of agriculture, commerce, manufactures and the arts, viewing him as a gentleman of pure moral character, and above the influence of the scheming politician, early sought his aid in carrying forward the great objects for which the institution had been formed. They were not disappointed in his hearty support of all measures calculated to advance the industrial interests of our country. Although he has repeatedly offered his resignation and expressed a wish to retire, he has been continued by annual election at the head of the institution as its president for a period of seventeen years, and has performed the duties of the station with undeviating firmness, and a constant readiness to lend his powerful aid in

accomplishing its legitimate designs. At the recent election he was re-chosen by unanimous vote. His numerous public addresses in support of the principles of the institution have been printed and widely disseminated, and bear evidence of his zeal and service in the cause of our national welfare.

Having been severely afflicted by the loss of several members of his family, in May, 1835, General Tallmadge left the United States for the purpose of making the tour of Europe. Few private American citizens while abroad have received the attentions which were bestowed on him by men of rank and authority in the different countries through which he passed. During his absence he embraced every opportunity of transmitting to his favorite Institute the most useful publications, drawings, maps, and every species of information which might be turned to account for the benefit of his fellow-citizens.

While on his tour in Russia, several incidents occurred which show the respect entertained for him by the Russian government, and the interest he has always taken in the commerce as well as in the agriculture and manufactures of his own country. A treaty arrangement had long existed between Russia, Sweden and Denmark, to guard the Baltic, by a rigorous quarantine, from contagious diseases, which was enforced at Elsineur. The commerce of the United States was seriously annoyed by this quarantine. It often delayed a voyage from twenty to sixty days, subjecting vessels to enormous exactions, much depending on the caprice or the cupidity of those charged with the execution of the laws. Several masters of American vessels, aware of the position which General Tallmadge occupied at the Russian court, solicited him to bring the attention of that government to the subject. He felt some hesitation about introducing it, lest it might seem to be an interference with diplomatic duties, it being his desire to appear solely in the character of a private American citizen. A fit occasion, however, was presented, and he conversed freely on the subject with the emperor. He was soon after requested to put his views on paper, to which he assented, and accordingly addressed a letter to his friend Prince Lievin, a nobleman who had honored him

with many kindnesses, and who was then in the service of the emperor. The letter was handed to the emperor, and by him referred to his minister, Count Nesselrode, to examine and report on the matter. It proved effectual in bringing clearly to the comprehension of the Russian government the utter inutility of the quarantine, as respects the introduction of diseases, and the great injury sustained to Russia by its existence. The result was that within a few weeks time the vexatious regulation was abandoned, and the Baltic has ever since been open and free, without charge, to American commerce.

Previous to this period Russia had been desirous of introducing the manufacture of cotton. In their zeal, four large factories at Moscow, and three at St. Petersburgh, had been erected, under the expectation of obtaining the machinery from England. It was made a matter of diplomatic solicitation, but without success; England persisted in her refusal to allow its export.

The Russians learned with delight that the machinery could be obtained in equal perfection from the United States. Gen. Tallmadge undertook to aid the Russians in their wishes, and in the summer of 1837, after his return, he caused the machinery for two cotton factories, complete, to be shipped from Lowell, as samples. They were received with great satisfaction; orders were returned for more machines than Lowell could prepare; the others being furnished from Patterson and Mattewan. The export of the cotton machinery, in pursuance of these orders, aroused England to the loss of her long monopoly in cotton manufactures, and true to her own interest, and alarmed at this new and valuable trade opening between Russia and the United States, soon after "repealed" so much of her law as prohibited the export of cotton machinery to Russia, and she has since exported to and supplied that country with machinery, and taken the trade from this country, which she was enabled to do from the greater shortness of the voyage.

The views and doctrines of General Tallmadge in regard to free trade and protection, are embodied in the following extracts from numerous public addresses delivered by him, which have been

widely disseminated through the press, receiving public approbation, and establishing for him a high reputation for talent, intelligence and eloquence, as a public speaker, and for integrity and private worth as a gentleman.

He held, emphatically, to the doctrine of self-preservation; that this country should create its wealth, its supplies, and, consequently, secure within itself its own happiness and entire independence. We are not the advocates of a high tariff. We advocate the encouragement of domestic industry, domestic production. We maintain the expediency of ample remuneration for, and an improved condition of home labor, over the depressed labor of Europe. As means to accomplish these great objects, we claim that the measures of our government should be defensive, and to countervail the encroachments of other countries, so as to secure to our own citizens equality in commerce, in rights and privileges, and by a just distinction between the raw material and the manufactured articles imported, to lay duties for revenue on the manufactured articles, so as to encourage our own labor in the production of like articles, and thus to protect the domestic industry of our own people, and develope the resources of our country.

A. C.

THE SHRUBS, FLOWERS AND PLANTS

OF

CALIFORNIA.

[Communicated to the Institute by the Rev. AUGUSTUS FITCH.]

The shrubs of California are mostly evergreen, and some of them of great beauty; on many, scattered flowers may be found at all seasons of the year. Besides the shrubby evergreen oak, which forms the chaparral about San Francisco, a beautiful variety of the Photinia is very common. This shrub sometimes attains the character of a tree, being found from fifteen to twenty feet in height. It is a very neat shrub, having a rich, glossy, laurel-like leaf, always bright in its shining foliage, and beautiful in its thick bunches of red fruit and white blossoms, frequently seen in fruit and bloom at the same time. The fruit and leaves are used by the natives as a tonic, being mildly astringent, having very much the flavor of the wild cherry, and in its medicinal qualities about equivalent.

The manzanette is a shrub of singular beauty, and peculiar to California. In the interior, upon the hills, it is very abundant. It appears to be a species of Vaccinium; it blossoms in February, presenting full bunches of white flowers, resembling the whortleberry. It is peculiar in its neat and curious foliage; in texture and position the leaf differs from that of most plants, having no upper and under surface, but both sides alike, standing edgewise, the plane of the leaf being perpendicular. Like the madrona, (before mentioned,) it has the property of casting off its outer bark, leaving a dark, smooth, glossy surface, resembling polished mahogany, affording beautiful canes without any artificialness.

This shrub is called the manzanette, from a Spanish word signifying little apple, the appearance and flavor of which the fruit has in a great degree. It is esteemed by the natives, who dry and pound it up, making it into a kind of paste. It may be always found in fruit or blossom. This, with the Photinia and oak, are perfectly hardy, and would prove very ornamental.

There is a great variety of the Ribes in California. Some of them have delicious fruits; but two are very interesting as flowering shrubs. The Ribes purpurea, or purple flowering currant, is found in great abundance all around San Francisco. This shrub resembles our black currant, and in its wood, fruit, and foliage, it is exactly corresponsive; but in bloom it is very sumptuous, making a most showy appearance with its rich, heavy clusters of purple flowers. The Ribes speciosa, or scarlet flowering gooseberry, is another shrub of great beauty; it is found in great abundance about Monterey, on the hill sides. It is an evergreen, with bright hawthorn-like foliage, with showy red flowers, resembling the Fuchsia coccinea, and when out in full, makes a most splendid display.

The Fremontia (first discovered by Col. Fremont) is a shrub peculiar to California, and is to be found only in the interior. It is rather rare, as I have met with it only in two or three localities, and there not in abundance. In its growth it resembles very much the fig tree; its bark is also similar, and the texture and form of the leaf is somewhat like, but is more uniform in the shape, and by no means so expansive. The flower is about the size of a half dollar, and of a sulphur color, resembling the Hibiscus; but the Hibiscus is five-petaled, whereas the Fremontia is one-petaled, but five-parted. It flowers profusely, and when out is a most showy and beautiful shrub. The flower is succeeded by a capsule like the Althea frutex, but very hairy, like a young peach.

The Prunus ilicifolia has been already described.

Amongst the shrubs found is a species of Rhus, so virulent in its character that some persons cannot approach it without being poisoned. It is quite frequent about San Francisco, indeed,

throughout the interior, and has proved a great source of annoyance to the miners, who call it the poison oak, the leaf having something the resemblance to that of the oak. It acts with great malignancy on most systems, while on some it has no effect, as is the case with myself, having constantly handled it without suffering the slightest inconvenience. Many who have suffered from it, dreaded it as they would a rattlesnake or any venomous reptile, and such is its reputation, that it is impossible to get men (who are acquainted with its character) at any price to clear up lands infested with it. A gentleman of my acquaintance at Monterey is so susceptible of its virulency, and has such a dread of it, from having suffered so severely from its effects, that he shuns it as he would a mad dog, and although extravagantly fond of gunning, he fears to indulge in this favorite sport lest he should encounter this dreaded vegetable.

The Lonicera, or honeysuckle, of several varieties, are found in the region of San Francisco, are a magnificent shrub, with beautiful evergreen foliage and rich scarlet flowers. Their bloom is succeeded by brilliant black fruit, very showy. Three or four kinds of Berberries are found in different localities, all of them beautiful evergreens, with showy yellow bloom, and perfectly hardy.

Of the Euchroma there are found the white, yellow, purple, and red, both annual and perennials. There are two or three varieties of the shrubby Euchroma, very showy, with bracts of different shades of red, and different styles of foliage. The blue annual Euchroma is also very showy, resembling a rich plume.

Two or three varieties of the Ceanothus cover the hills and frequent the valleys around San Francisco and Monterey, having a rich dark foliage, and in early spring displaying spikes of delicate cerulean blossoms, of delightful fragrance.

The Mimulus exists in great variety in California, with blue, yellow, red, white, purple, and orange flowers; one of a shrubby character is found in abundance on the hills around San Francisco, a beautiful evergreen, with a neat lanceolate leaf and bright orange bloom, found in flower at all seasons of the year.

There are many kinds of Salvia and Solanum, both annual and perennial. A shrubby Solanum is found on the elevations about San Francisco, an evergreen, with bright indigo corolla, always in bloom and very prolific. Also a shrubby Salvia, that attains the height of six or eight feet, with full handsome foliage, the flowers large, but of insipid color.

The Malva and Hibiscus genera are very frequent. A shrubby Malva, of great beauty, is found in the valley of San Jose. It grows from three to six feet, with heavy rich foliage; and in May and June is covered with flowers of the size and color of the peach blossom. A beautiful Hibiscus is found along the banks of the San Joaquin, resembling our marshmallows, but having a much more magnificent flower, of pure whiteness. A pretty trailing Malva is found on the flats about Stockton and Sacramento, with a delicate fruit flower and singular leaf, like the Begonia. In the interior they are found in vast variety; they are found mingled with the Delphinium or Larkspur, Lupin, Ænothera, and other flowers.

The Cowania is a neat shrub, resembling somewhat the Alnus or alder, but is singularly conspicuous in its seed, which is plumose, giving the shrub a feathery appearance like the Clematis when in seed; the bark of the tree has precisely the flavor of the birch.

The Sambucus or elder differs from ours in its growth, fruit, and blossoms; in the rich valleys, along the water courses, it attains the size of a tree, fifteen or twenty feet, and there is one in the valley of San José, nearly three feet in diameter at the base, and upwards of forty feet high, but this is rare; the flower is of a delicate cream color and very fragrant; the fruit has a pleasant acid, and would make a delicious and wholesome wine.

Of the Sloe there are several kinds, all pretty shrubs, producing showy fruit, which are eaten by the natives, but they are all insipid or ill tasted.

The Calycanthus is found in abundance along the ravines in the interior; it surpasses any we have here, in the size and color of its flowers, and in the splendor of its foliage, but it is not so fragrant as the Orientalis.

The Cephalanthus is also a much richer shrub in California than in the eastern states, having a heavier leaf and larger tufts of flowers.

The Cerasus Californicus, or California cherry, is a pretty shrub, and when in fruit, very showy; its inflorescence is in racemes like the currant or common wild cherry; the fruit about the size of the small choke cherry, heart-shaped, transparent, and of an agreeable flavor; it would make a very ornamental shrub, and would be worthy of cultivation for its fruit, which, no doubt, might be improved, and would come in much later than any of our cherries, now in cultivation, which would be very desirable. (This is altogether different from the Cerasus ilicifolia, mentioned amongst the trees of California.)

The Pyrus Californicus is a species of Cydonia or Quince, resembling the Pyrus Japonica in its growth and foliage, but differing entirely from that beautiful shrub, both in fruit and flower. Its inflorescence is umbelliferous; its fruit very small, not larger than a pea; it will prove a valuable stock for grafting upon.

The Cercis of California is a shrub of great beauty, having a much handsomer foliage and more delicate bloom than the Cercis Canadensis or Judas tree.

The Philadelphus Californicus has no peculiarity; resembling the Pinodorus. These are found in great abundance along the Mercedes River, growing amongst the Calycanthus, Cephalanthus, sloe, cherry; a beautiful shrubby Solidago, and a Spiræa of delicate beauty.

The Lupin of California is interesting. Of this there is a vast variety, both annual and perennial; there are two kinds, of a shrubby character, worthy of notice, the yellow and the blue, found in abundance on the sand hills about San Francisco; they attain some times the height of five or six feet, forming a complete hemisphere of rich foliage; and when in bloom, their rich heavy spikes of flowers, contrasting with the soft silver leaves, a more beautiful plant cannot be imagined.

The Phalangium pomaridianum, or soap plant, is to be found in great abundance in every part of California; it has been much used by the natives as a substitute for soap. It is a pretty bulbous plant, producing delicate liliaceous white flowers; it is very clarifying to the skin, and is considered good for cleansing old sores; in washing, much use is apt to affect the skin. Some sailors of my acquaintance were tempted (from its resemblance to the onion) to boil and eat some of the bulb, which proved a violent emetic.

A curious species of Cucumis or Bryoniæ is found in many parts of California, with immense tubers, frequently larger than a barrel, perfectly solid. The vine resembles the wild cucumber, and has its rapid growth. The flower comes out in bunches like the wild cucumber, and is of delightful fragrance. The flower is succeeded by large fruit filled with hard oval seeds, of which the squirrels and marmots are very fond. I have met with three varieties, one with a round fruit, about the size of a chestnut ball, and like the chestnut, covered with prickers; indeed, so like that they might be taken one for the other. Another of similar character, but oval fruit; another of oblong fruit of great size. These fruit, when ripe, dry and burst open, and being suspended, the seed all fall out. I have never heard of the root being used for any purpose. I think it is an emetic.

The most beautiful flower of California, and peculiar to it, is the Calochortus, found in abundance in the interior. This splendid bulb has very much the character of the tulip, but the tulip has six petals, whereas the Calochortus has only three; the Calochortus being also of a more rich and delicate texture. Of this magnificent bulb, I have met with three distinct species, the white or grandiflora, including the purple, with its variety of shades and tints, the yellow varying from light straw color to golden yellow; and the drooping, called the California Snow-flake. This flower is alike beautiful and curious, each petal having a mark like that on the plumage of the peacock, the spots giving vast variety by their different colors and shades, some being red, others scarlet, purple, yellow, &c., so that passing through a field of these interesting blossoms, slightly agitated by the wind, the ex-

hibition is like that of a multitude of rich butterflies on the wing, just fluttering above the herbage. The first of this beautiful flower was introduced into England by the late Mr. Douglass, in the year 1833.

Another beautiful bulb is the Brodiæa, of many varieties; it resembles the Agapanthus, but with flowers more delicate and rich. The bulb of one variety is much esteemed by the natives as a delicious esculent; they call it the Camas; it has very much the flavor of the raw peanut; it is eaten roasted or raw.

The Abronia (so called from its delicate involucrum) is a beautiful evergreen trailer, with thick succulent leaf, resembling somewhat the ice-plant, with umbels of the richest coloring, having the appearance of the verbena, but much more sumptuous in its display; in its tints, corresponding more with the rich Lantana, but with umbels of much greater magnitude. It loves a sandy soil, and is found in great abundance on the beach of San Francisco, Monterey, and all along the coast. I have met with three varieties of this beautiful flower, the white, the pink, and the yellow. The root is extensive, penetrating to a great depth in the sand, and branching off like the root of the horseradish or dock. The root is eaten by the natives, and is said to be both palatable and nourishing. Nothing in floral beautifulness can be more attractive to the eye than an extended mound of pure white sand, with all the varieties of this splendid flower trailing over it.

The Hosackia is found in California, of great variety, most of them very beautiful. The Rhododendron and Azalea in great abundance in the north, about Trinity river.

The Dendromecon rigidum, a beautiful plant with singular leaf, and yellow flower, like the Eschscholtzia, is found only on the hills in the mineral region.

Three or four varieties of the Eschscholtzia I have found, and one with magnificent double flowers I discovered on the burial ground near Sacramento.

Of the Mentzelia I have met with two or three kinds; one with immense yellow flowers, growing in the sand banks along the rivers in the interior.

The Pentstemon of California is a pretty plant; two varieties, yellow and red.

The most diversified flower in California is the Ænothera, from white to deepest purple, yellow, pink, and variegated. It is an interesting sight, an extended field of these beautiful flowers. One of a low character, with yellow flower, is used very much as an early green, and is found to be a very wholesome and pleasant vegetable. It is found in abundance about San Francisco, and one of the first plants that vegetates.

On some of the shrubs and plants of California scattered flowers may be found at all seasons of the year. This gives cheerfulness to California scenes even in the dryest and most desolate season of the year, so that the dry season, which answers to our winter here, never has that dreary appearance which our wintry scenery puts on here at home. Most of the plants which bloom at this dry season are of a balsamic character, and many of them highly so; amongst them are found the Helianthus, Salvia, Mentzelia, Lepidium, Mimulus, and others.

At the first rains, about November or December, the face of nature in California begins to change, and in April and May the region throughout is like fairy land; so rich in its verdure, and so gay and brilliant in its floral beautifulness, when hill and dale, high mountain top and deep ravine are bright with bloom of trees and shrubs, while the ground beneath is herbaged with sparkling flowers of every hue.

Entering San Francisco at this season of flowers, one is struck with the singular beauty of the scene. Although no lofty trees meet the view, except at a distance in the ravines or upon the mountain ridges, yet such a rich luxuriance of verdure is spread over the beautifully rounded hills, commingled here and there with plats of bright flowers of various hue, as to present a picture truly novel and delighting. Here is a field of Iris, mingled with the grass; there a plot of Phlox, Mimulus, Violets, Bodicea, Euchroma, Ænothera, Ipomea, Cyclamen, Geranium, Lupins, and many others of various colors; amongst them the golden Ranun-

culus is found most frequent, and conspicuous. This sometimes spreads around to great extent, occupying frequently entire hills, flowing down the sides as if fluid gold had issued from the top, and was seeking by gravitation the vale below. The prevalence of this gold-colored flower on the hills has given to the entrance of San Francisco harbor the appellation of "golden gate."

The plant called the Buena Yerba is a kind of mint, a pretty, delicate trailer, found growing very thick amongst the chaparral. It loves the shade, and is much estimated by the natives as a tea. The prevalency of this plant about the region of San Francisco, gave the name of Buena Yerba to the first settlement, also the island opposite.

Other plants and shrubs common in California, are the wild rose, several kinds of Clematis, Cornus or Dogwood, Phacelia, Lepidum elegans, Poppy, many varieties, Fenzelia, Rubus, several kinds, Convallaria, Lilium, Gnaphalium, Asclepias, great variety, Fritillaria, many kinds, Orchis, Campanula, Hyacinths, with climbing stalk, Gladiolus, beautiful yellow, Clarkia, Mesembryanthemum, one with fruit called the Beach strawberry, the flavor of which it most resembles, Nemophila, great variety, Antirrhinum or Snap Dragon, Artemesia, Dipsacus or teasel, some of them very beautiful and curious; one with a rich indigo flower; Myrica, or bayberry, resembling ours, but more productive in wax, worthy of cultivation for this produce; Nicotiana, or tobacco; Ixia; Sabbatia, several kinds, one called Conchalagua, much esteemed as medicinal; Rumex, several kinds, used for greens; Brassica, several kinds; Lychnis, a beautiful variety; Hypericum, or St. Johnswort, many kinds; Scutellaria, great variety, amongst them the tuberosa; Typha, or cat-tail, along the rivers; Anthemis; Allium, several kinds; Oxycoccus, (cranberry,) found in the north; Ervum; Pisum; Medicago; Robinia; Trifolium, great variety; Dielytra, very beautiful, found in the mineral regions; Portulacca; Leontodon, many kinds; Corylus, or hazel; Mentha, great variety, many of them very beautiful; Viseum; Agaricus, in great plenty in the season, and of fine flavor; Anagalis; Equisetum; Lymphoria, or mawberry, very common; Datura, in great variety, some with magnificent flowers;

Nymphæa, Trillium; Linum, or flax, this produces a much fatter seed than our flax, and might prove worthy of introduction; Gilia, very showy; this is considered a cure for the bite of the rattlesnake.

In the south are to be met with the Palmi Cacti in vast variety; many of them produce very palatable and wholesome fruit. The white spine cactus, found in great abundance below San Francisco, at San Jose and Monterey, yields a most delicious fruit, resembling in flavor very much a rich melting pear. It is found all over Mexico, and is considered one of the most grateful of the tropical fruits. It is this which forms the Mexican coat of arms; it was adopted from the circumstance of having saved the republican army from starvation. Having retreated before the enemy, they found themselves in a desolate country, without water and destitute entirely of provisions, when they came providentially upon a region of this most acceptable fruit, full ripe, which enabled them to hold out and preserve their independence, from whence its adoption in the coat of arms. These Cacti, in all the varieties, form admirable hedges. Then there is the Yucca, one variety of which, like the Phalangium, is used as a substitute for soap.

Of the Aloes there are many kinds, some of them throwing up their flower stalks fifteen and twenty feet in height. One of the varieties is cultivated for a drink which it affords, said to be very wholesome and pleasant.

The wild mustard is found in vast quantities along in the valleys, out-topping a man on horseback. No use is made of it, although it is superior in strength and flavor to the imported mustard.

STATISTICS OF AGRICULTURE.

The census of 1850, or seventh census, has not yet been published. An abstract of 160 pages, 8vo., has been prepared by J. C. G. Kennedy, Esq., Superintendent, and published by a resolution of the last House of Representatives, from which, for the purpose of disseminating interesting agricultural information, we have made the following extracts.

According to the returns, the whole number of acres of improved and unimproved land, in farms, in the States and Territories of the United States, amounts to 303,078,970 acres; of which, 118,457,622 acres are improved, and 184,621,348 acres, in farms, are unimproved. The average cash value of the above is estimated at $10.79 per acre; of which, the State of New-York contains 19,119,088 acres; 12,408,968 acres improved, and 6,710,120 acres unimproved. The average cash value of the improved and unimproved land in the State of New-York, is estimated at $29 per acre.

Farming Implements and Machinery.—One hundred and fifty-one millions of dollars are at this time invested in implements and machines for aiding and abridging the work of the hands in cultivating the earth and in preparing its produce for consumption in the United States. Of the whole sum invested in articles of this character, New-York has expended $22,084,926; Pennsylvania, $14,722,541; Louisiana, $11,576,938; Ohio, $12,750,-585; Kentucky, $5,169,037; Virginia, $7,021,772.

Domestic Animals.—The first animals brought to America from Europe, were imported by Columbus, in his second voyage, in 1493. He left Spain as admiral of seventeen ships, bringing a collection of European trees, plants, and seeds of various kinds, a number of horses, a bull, and several cows.

The first horses brought into any part of the territory at present embraced in the United States, were landed in Florida, by Cabeca de Vaca, in 1527, forty-two in number, all of which perished or were otherwise killed. The next importation was also brought to Florida, by De Soto, in 1539, which consisted of a large number of horses and swine, the progeny of the latter soon increasing to several hundred. The Portuguese took cattle and swine, to Newfoundland and Nova Scotia, in the year 1553. Thirty years after, they had multiplied so abundantly that Sir Richard Gilbert attempted to land there to obtain supplies of cattle and hogs for his crew, but was wrecked. Swine and other domestic animals were brought over to Acadia by M. L'Escarbot, a French lawyer, in 1604, the year that country was settled. In 1608, the French extended their settlement into Canada, and soon afterwards introduced various animals.

In 1609, three ships from England landed at Jamestown, in Virginia, with many immigrants, and the following domestic animals, viz., six mares, one horse, six hundred swine, five hundred fowls, with a few sheep and goats. Other animals had been previously introduced there. In 1611, Sir Thomas Gates brought over to the same settlement one hundred cows, besides other cattle. In 1610, an edict was issued in Virginia prohibiting the killing of domestic animals of any kind, on penalty of death to the principal, burning the hand and loss of the ears to the accessory, and twenty-four hours whipping to the concealer. In 1617, the swine had multiplied so rapidly in the colony that the people were obliged to pallisade Jamestown, to prevent being overrun with them. In 1627, the Indians near the settlement fed upon hogs, which had become wild, instead of game. Every family in Virginia, at that time, who had not an abundance of tame hogs and poultry, was considered very poor. In 1648, some of the settlers had a good stock of bees. In 1657, sheep and mares were forbidden to be exported from the province. By the year 1722, or before, sheep had somewhat multiplied, and yielded good fleeces.

The first animals introduced into Massachusetts, was by Edward Winslow, in 1624, consisting of three heifers and a bull. In

1626 twelve cows were sent to Cape Ann. In 1629, one hundred and fifteen cattle were imported into the plantations on Massachusetts Bay, besides some horses and mares, several conies, and forty-one goats. They were mostly ordered by Francis Higginson, formerly of Leicestershire, whence several of the animals were brought.

The first importation into New-York was made from Holland, by the West India Company, in 1625, comprising one hundred and three animals, consisting of horses and cattle for breeding, besides as many sheep and hogs as was thought expedient. In 1750, the French of Illinois were in possession of considerable numbers of horses, cattle, and swine.

The principal breeds of horses, adapted for specific purposes, in the middle, northern, and western States, are the Norman, the Canadian, the Morgan, the Conestoga or Pennsylvanian, the Virginian, and the Kentuckian. For carriages of heavy draught, the Conestogas are regarded by many as best. For the saddle, draught, and other useful purposes, the Morgans are highly prized, especially in New-York. For roadsters, the Normans and Canadians are frequently sought. For blood, the Virginians and Kentuckians generally take the lead.

Among the various races of cattle existing among us, where strict regard is paid to breeding, with a definite object in view, a preference is given to the Durhams or Short-horns, the Herefords, the Ayrshires, and the Devons. The Durhams, from their rapid growth, early maturity, and capability of taking on fat, are adapted only for high keeping, or to the richest pastures of the middle and northern states, and those of Ohio, Kentucky, and other parts of the west. The males, when judiciously crossed with other breeds, or with the common cows of the country, often produce the best of milkers, and for this purpose they have been especially recommended. The Herefords, on the contrary, from their peculiar organization, are better adapted for poor or indifferent pastures, and regions subject to continued drought; and for this reason they are well suited for California, New-Mexico, Texas, and other parts of the south. The oxen of this breed are good in the

yoke, and the cows, when properly fed, give an abundance of milk. The Ayrshires are best suited for a cool, mountainous region, or a cold, rigorous climate. They succeed well in Massachusetts, New-Hampshire, and Vermont, and are highly prized for their tameness, docile tempers, and rich milk. The Devons, from their hardihood, comparatively small size, and peculiar structure, appear to be adapted to almost every climate, and to all kinds of pasturage. From their stoutness, good tempers, honesty, and quickness of action, they make the best teams; and in this respect their chief excellency consists. The cows make fair milkers, and their flesh very good beef. They also possess great aptitude to take on fat.

The kinds of sheep most sought for, are the pure-blooded Merinos, the Saxons, the Cotswolds, the Leicestershires, the Oxfordshires, and the South-Downs. The Merinos, (including the Rambouillets) the Cotswolds, the Leicestershires, the Oxfordshires and the Saxons, are the most highly prized for their wool. The South-Downs are particularly esteemed for the excellency of their flesh, and their wool is valuable for many purposes on account of the facility with which it can be wrought.

The prevailing breeds of swine in the middle, northern and western states, are the Berkshire, the Leicestershire, the Suffolk, the Essex, the Neapolitan, and the Chinese. The Neapolitans are particularly well adapted for a southern climate.

According to the census returns of 1840, there were in the United States 4,335,669 horses and mules; 14,971,586 neat cattle; 19,311,374 sheep, and 26,301,293 swine. The returns of the census of 1850, shows 4,335,358 horses; 559,229 asses and mules; 28,360,141 horned cattle, (including 6,392,044 milch cows, and 1,699,241 working oxen); 21,721,814 sheep; and 30,316,608 swine.

Milch Cows.

Under the general term of "neat cattle," were embraced in the census of 1840 the three descriptions of animals designated in that of 1850 as milch cows, working oxen, and other cattle. The aggregate of the three classes in 1840, was 14,971,586; in 1850, 18,-355,287. The increase, therefore, between the two periods was

3,383,701, or about 20 per cent. The amount of butter produced gives an average of something over 49 pounds to each milch cow. The average production of cheese to each cow is 16⅔ pounds.

Butter and Cheese.

The census of 1840 furnishes us no statistics from which we can accurately determine the quantity of butter and cheese then produced. New-York is far in advance of any other state in the productiveness of its dairies. They yield one-fourth of all the butter, and nearly one-half of the cheese produced in the Union.

The following table shows the amount of dairy products exported from the United States for several years past:

Years.	Butter, lbs.	Cheese, lbs.	Value.
1820–21,....	1,069,024	766,431	$190,287 00
1830–31,....	1,728,212	1,131,817	264,796 00
1840–41,....	3,785,993	1,748,471	504,815 00
1841–42,....	2,055,133	2,456,607	385,185 00
1842–43,....	3,408,247	3,440,144	508,968 00
1843–44,....	3,251,952	7,343,145	758,829 00
1844–45,....	3,587,489	7,941,187	878,865 00
1845–46,....	3,436,660	8,675,390	1,063,087 00
1846–47,....	4,214,433	15,673,600	1,741,770 00
1847–48,....	2,751,086	12,913,305	1,361,668 00
1848–49,....	3,406,242	17,433,682	1,654,157 00
1849–50,....	3,876,175	13,020,817	1,215,463 00
1850–51,....	3,994,542	10,361,189	1,124,652 00

Indian Corn or Maize.

Among the objects of culture in the United States, indian corn, or Maize, takes precedence in the scale of crops, as it is best adapted to the soil and climate, and furnishes the largest amount of nutritive food. Where due regard is paid to the selection of varieties, and cultivated in a proper soil, it may be accounted as a sure crop in almost every portion of the habitable globe, between the 44th degree of north latitude, and a corresponding parallel south. It is produced in every State and territory of our Union; in Mexico, the West Indies, most of the States of South America, France, Spain, Portugal, Lombardy, and in southern and central

Europe generally. It is also cultivated with success in northern, southern, and western Africa, India, China, Japan, Australia, and the Sandwich Islands, the groups of the Azores, the Madeiras, the Canaries, and numerous other ocean isles. Although there has been much written on the eastern origin of this grain; it did not grow in that part of Asia, watered by the Indus, at the time of Alexander the Great's expedition, as it is not among the productions of that country, mentioned by Nearchus, the commander of the fleet. Neither is it noticed by Arrian, Diodorus, Columella, nor any other ancient author. And even as late as 1491, the year before Columbus discovered America, Joan di Cuba, in his "Ortus Sanitatis," makes no mention of it. It has never been found in any ancient tumulus, sarcophagus, or pyramid; nor has it ever been represented in any ancient painting, sculpture or work of art, except in America. But in this country, according to Garcilasso de la Vega, one of the earliest Peruvian historians, the palace gardens of the Incas were ornamented with maize, in gold and silver, with all the grains, spikes, stalks, and leaves; and in one instance, in the "garden of gold and silver," there was an entire cornfield of considerable size, representing the maize in its exact and natural shape; a proof, no less of the wealth of the Incas, than of their veneration for this important grain.

In further proof of the American origin of this plant, it may be stated that it is still found growing, in a wild state, from the Rocky Mountains, in North America, to the humid forests of Paraguay, where, instead of having each grain naked, as is always the case after long cultivation, it is completely covered with glumes, or husks. It is moreover, a well authenticated fact, that maize was found, in a state of cultivation, by the aborigines, on the island of Cuba, at the time of its discovery by Columbus, as well as in most other places in America, first explored by Europeans.

The first successful attempt of the English in North America to cultivate this grain, was made on the James River, in Virginia, in 1608. The colonists sent over by the "London Company," adopted the mode then practiced by the Indians, which, with some modifications, has been pursued ever since.

According to the census of 1840, the maize crop of the United States was 377,531,875 bushels; of 1850, 592,326,612 bushels.

The following tables are constructed from the census returns of 1850:

Live Stock.

	In the U. States.	In the State of New-York.
Horses,	4,335,358	447,014
Asses and mules,	559,229	936
Milch cows,	6,392,044	931,324
Working oxen,	1,699,241	178,909
Other cattle,	10,268,856	767,406
Sheep,	21,721,814	3,453,241
Swine,	30,316,608	1,018,252

Total value of live stock in the U. States, $543,969,420
do do in New-York, .. 73,570,499

Agricultural productions during the year ending June 1st, 1850, in the United States and State of New-York.

	United States.	New-York.
Wheat, bushels of,	100,503,899	13,121,498
Rye, bushels of,	14,188,639	4,148,182
Indian corn, bushels of,	592,326,612	17,858,400
Oats, bushels of,	146,567,879	26,552,814
Rice, pounds of,	215,312,710	
Tobacco, pounds of,	199,752,646	83,189
Ginned cotton, in bales, 400 lbs. each	2,468,624	
Wool, pounds of,	52,789,174	10,071,301
Peas and beans, bushels of,	9,219,975	741,636
Potatoes, bushels of,	65,796,793	15,398,362
Sweet potatoes, bushels of,	38,259,196	5,623
Barley, bushels of,	5,167,016	3,585,059
Buckwheat, bushels of,	8,956,916	3,183,955
Value of orchard products,	$7,723,326	$1,761,950
Wine, gallons of,	221,240	9,172
Value of market garden produce,	$5,269,830	$912,047
Butter, pounds of,	313,266,962	79,766,094

Cheese, pounds of,	105,535,219	49,741,413
Hay, tons of,	13,838,579	3,728,793
Clover seed, bushels of,	468,979	88,222
Other grass seeds, bushels of,	416,811	96,493
Hops, pounds of,	3,496,029	2,536,299
Hemp, tons of,	35,093	4
Flax, pounds of,	7,715,961	940,577
Flax seed, bushels of,	562,312	57,963
Silk cocoons, pounds of,	10,843	1,774
Maple sugar, pounds of,	34,249,886	10,357,484
Cane sugar, hogsheads of 1,000 lbs.,	247,581	
Molasses, gallons of,	12,700,606	56,529
Beeswax and honey, pounds of,	14,853,857	1,756,190

A. C.

WHEAT.

The wheat producing district in the United States is confined to about 10 degrees of latitude, embracing nearly half the number of the States. The wheat crop of the United States, in 1848, was 126,000,000 bushels, and the population 22,000,000. This gives less than six bushels to each inhabitant, which is the estimated consumption to each person in England, per annum. In 1838, the wheat crop in Virginia was nearly equal to ten bushels for each inhabitant; in Maryland it was over ten bushels; in Delaware it was about seven bushels; in Indiana, in 1848, the crop was eight and a half bushels; Illinois less than seven bushels; Ohio ten and a half bushels; and in Michigan, the crop was equal to 23½ bushels for each inhabitant. In 1849, the wheat crop in New-York was equal to 5½ bushels; and in Pennsylvania, same year, it was six bushels, to each inhabitant.

Of the States of Indiana, Illinois, Wisconsin, and Iowa, it is said, that the soil and climate are not particularly favorable to the production of wheat. The wheat crop of Illinois, in 1851, was below that of Kentucky, as compared with population, and both Illinois and Indiana were below Tennessee. Grazing, feeding, and raising stock, are presumed to be the most profitable pursuits for the farmers of those states.

High cultivation is to some extent a security against the ravages of the fly. A. C.

ARTICLES EXHIBITED.

GROSVENOR'S PATENT HAY PRESS.

J. Grosvenor exhibited a model of a press for the purpose of pressing hay in packages of 100 lbs. each, which is meritorious and novel. The press is constructed on the pile-driving principle, with a driver of one ton weight. The machine is worked by horse power, with the assistance of a man and two boys, and completes 125 packages per day, bound with hoops and made good work. The practice of pressing trash in the centre of bales of the usual size, has rendered small bales very acceptable. The cost of constructing this press is about $100. A. C.

SILK MANUFACTURE.

Mr. Jacob Neustaeder, No. 52 Dey-st., exhibited thirty pieces of silk brocade, of his own manufacture, designed for vestments, church and cabinet upholstery, &c., of very superior quality and rich coloring. Mr. Neustaeder informs us that he uses the Italian silk for this manufacture, because of its superior gloss. His manufactory is located at West Hoboken, N. J., where he now employs twenty hands. The impression prevails that much of this style of goods finds its way into the U. States without paying duties, which Mr. N. believes interferes with his manufacture. The committee awarded to Mr. Neustaeder the gold medal of the Institute on the report of the judges. A. C.

PENRHYN MARBLE.

This is a new article, made of slate stone from the Penrhyn quarry, in Wales. It is wrought into various forms for chimney pieces, pier slabs, table tops, brackets, &c., and enameled, bearing a very close resemblance to the richest kinds of marble with an exceedingly high polish, which resists the action of acids, oil,

smoke, coal-gas, &c., and endures the heat as well as marble. It is sold cheaper than any other material for the same purposes. Manufactured by the Penrhyn Marble Company, Boston, Mass. Patented 1852.

NEW PUMP VALVE.

Mr. Nehemiah Dodge, No. 42 University Place, exhibited a pump valve of new construction, admirably adapted to raising water, and freeing itself from obstructions, such as generally choke the ordinary valves.

E. CARVER'S PATENT IMPROVED COTTON GIN, MADE BY E. CARVER & CO., EAST BRIDGEWATER, MASS.

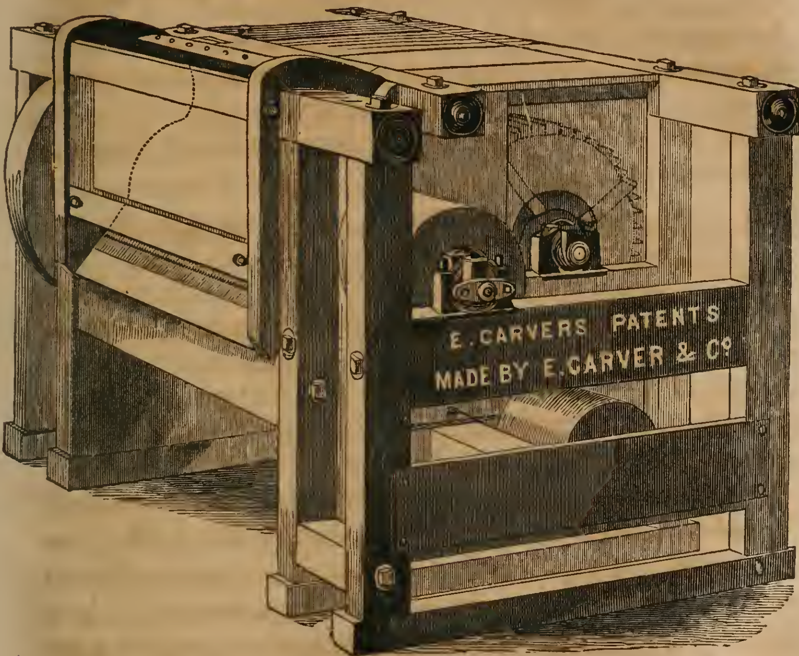
This gin is made under the patents secured to E. Carver in 1838 and 1845.

These patents are for improvements on the "Whitney" saw cotton gin, so widely known and justly valued.

The invention of Mr. Whitney consisted in the arrangement of a series of points or circular saws, projecting from a cylinder or shaft upon which the cotton to be ginned was placed. These points or saws as they revolved with the shaft, passed between stops or gates having spaces between them, which were too narrow to allow the seed to pass, but which were wide enough to allow the points or teeth to take such fibres as they detached from the seed through along with them. Behind the saw cylinder and in contact with the saws, was placed a rapidly revolving wing brush, by the motion of which the cotton was removed from the teeth after they had passed through between the grates, and carried to the back part of the machine. The seeds when sufficiently cleared from fibre dropped in front.

This invention was the first substitute for the primitive method of picking the lint from the seed by the fingers; and it was sufficient for the times. The change wrought by this invention was sudden and wonderful.

The culture of the short staple cotton was enormously increased, and still the demand outran the supply. Cotton was employed



CARVER'S PATENT IMPROVED COTTON GIN.

in a thousand fabrics, theretofore made of a different material, and was incorporated into almost all kinds of textile manufactures.

In the operation of this gin, however, and also in the operation of all subsequent gins, up to the time of the date of these improvements, great difficulties were found by the planters and manufacturers from the following facts, viz:

The grates were so constructed, that in the practical operation of the machine, the pellets, motes, false seed, &c., which are found in the seed cotton, would be arrested and accumulated in the spaces between the grates above the saws, and be firmly packed there, till they extended entirely down to and by the teeth of the saws. The saws, therefore, as they revolved, taking the cotton through this hard mass, would always cut, nap and injure the fibre very materially, until the machine was stopped and these spaces cleared; and if this clearing operation was neglected, the friction caused by the saws revolving through this hard mass would sometimes produce fire.

Another and more serious difficulty, especially to the manufacturer, was found in the construction and operation of the brush in the common gin, particularly when the cotton came to be used in the finer fabrics, as cambrics, muslins, &c.

The brush has heretofore been made with from four to eight wings attached to an iron or wooden shaft of different sizes, like the wings of a fan-blower. Along the outer edges of these wings bristles were inserted which swept over the saws to take the cotton from the teeth, striking or dipping on to them say one-fourth of an inch beyond the base of the tooth.

In the operation of this brush each separate wing was relied upon in each revolution to take the cotton from a large number of teeth in its passage over them, and blowing the load through the gin into the pickroom. The load of several teeth being thus taken off by each row of bristles, the cotton was of course delivered into the pickroom in wads, doubled, napped, unseparated, and

enclosing all the motes, trash and impurities, which were wrapped up in this wad. The staple also was thereby greatly injured, inasmuch as it was left in a condition in which it could not be properly prepared by the manufacturing machinery, especially in its preparation for the finer and more delicate fabrics.

Upon this brush, also, they depended to blow the ginned cotton into the pickroom, but in operation the wing brush produced such eddies and counter-currents of air in the body of the gin, that the cotton following these currents would collect and wind round the shaft of the brush, and clog the running parts of the machine, so that if not frequently stopped and cleaned, fire from friction would be produced, in the same way as between the grates by the saws as before described.

Again, almost all the air which was required for the proper operation of the gin, was derived by this brush from the front side of the machine, under the saw cylinder, and it produced quite a strong current through under said cylinder. A large portion of the motes, dirt and other foreign substances, therefore, which fell from the seed-roll, both in front and behind the saw cylinder, and which were specifically heavier than the cotton, would be drawn in by this front current and carried through the gin into the pickroom along with the ginned cotton.

As the demand for cotton increased, and the uses for which it was employed became more varied, improvements became necessary, both in the quality of the staple and in the machinery for manufacturing it into cloths, yarns, &c. In process of time these improvements were introduced. It was found that a more desirable variety of cotton was produced by introducing and crossing the Mexican green seed (the fibre of which adhered very closely to the seed) with the common black seed of Mr. Whitney's time, (the fibre of which was detached much more easily.) But the fibres of this new variety adhered to the seed with very great tenacity; and other varieties have since been introduced, which, while they may have improved the quality of the staple, have been much more difficult to gin properly. The machinery also had been invented to prepare and work the article into the finer

and more delicate goods, and now corresponding changes and improvements in the gin required.

So that while greater speed in ginning was required, in consequence of the enormous increase in the culture of cotton, still a gin was wanted which would operate so as not to cut or nap the cotton so much as had been done, even though the machine had to gin a variety of cotton, the fibre of which adhered to the seed very much more firmly than it did in that variety which was planted at the time of the original invention. The manufacturer of the finer thread and of the more delicate fabrics also required that the fibres should be more perfectly straitened and separated, and less napped, and also that the motes and other foreign substances should be removed from the cotton more effectually than had theretofore ever been done, or than could be done with the machine as it then was, owing to the then construction of its grates, brush, and other parts of the gin. In addition to the above wants, there was always felt by the planters a strong necessity that some modification should be made in the arrangement or construction of the machine, whereby effectually to remove the danger of fire from friction, caused by the cotton collecting and winding around or clogging the running parts of the gin, and so not unfrequently destroy the gin, gin-house, and a large portion of their crop.

The above desirable qualities were not found in the gins above referred to. Various experiments have been made to supply the deficiencies and remedy the evils alluded to, until the date of the patents herein named But in no instance (and the fact is a most striking and significant tribute to the genius of the inventor of the cotton gin) has any machine ever been successfully employed in clearing the short staple cotton from the seed, wherein all the elements of the "Whitney saw cotton gin" have not been retained. And it has only remained to those who came after him, to so improve on the *application* of the leading thought of this great man's wonderful discovery, as to adapt it the better to the more recent changes in the character, uses and methods of the manufacture of cotton.

With the gin as Mr. Whitney left it, and with the gin having the above described defects, Mr. Carver, many years ago, in the year 1807, commenced the manufacture of gins at Natchez, Miss., and has devoted himself exclusively to the business at that place, and at Bridgewater and East Bridgewater, Massachusetts, up to the present time, and is probably the oldest gin manufacturer in the country.

In 1832, his attention having been called to the necessity for improvements in the cotton gin, demanded by the changes and causes above stated, he commenced a series of experiments upon the machine, with a view of constructing a gin which should be free from all the objections heretofore existing in the article, and should supply all present wants. A careful and elaborate system of experiments, continued through eight years, resulted in the invention of sundry improvements which have met the wants of the public. The most important of these were secured by the patents of 1838 and 1845, above referred to.

The patent of 1838 was for a new grate, so constructed as entirely to prevent the cotton from collecting or becoming choked or clogged in the spaces between the grates above the saws, as heretofore referred to, and thus prevented the fibre from being cut, mangled or napped by the teeth.

The patent of 1845 is for a cylinder brush with an increased number of rows of bristles, and having fans on its ends in combination with the cotton gin.

The construction and operation of this brush, in said combination, is such, that the following advantages are gained by it over brushes previously used:

1st. By its size, number of rows of bristles and relative velocity, as compared with the saw cylinder, it is enabled to take the cotton from the teeth in minute quantities, thereby undoubling, separating and straightening the fibres in a more perfect manner than has heretofore been done. and avoids napping.

2d. This minute separation of the fibres, allows the motes and dirt more easily to be separated from the cotton and thrown down under the gin.

3d. The fans attached to the ends of the brush, taking the air through holes in the ceiling of the gin at each end of the brush shaft, by their centrifugal action produce a strong and uniform current of air, sufficient to drive the ginned cotton through any required length of flue.

4th. These fans also produce and direct a strong current of air upwards, by the ends of the brush into the chamber of the gin, which is over the brush, and thus prevents the cotton from dropping upon and winding around the shaft, or collecting between the ends and ceiling of the gin, and consequently avoids the danger of fire by friction at that point.

5th. The air in the chamber along the entire length of the brush, being thus constantly compressed by this current, so driven into it, prevents the brush in its operation, from drawing or sucking up the ginned cotton from the flue behind it into the chamber, and so avoids the evil known to planters and ginwrights as wallowing.

6th. This compressed air also in passing down out of the chamber, on the front side of the brush, between it and the saws, first assists the bristles to remove the cotton from the saws in an open manner, and then instantly clears the cotton from the bristles, keeping the brush always in a clear state.

7th. The principal current of air necessary for the operation of the gin, being supplied by the fans on the ends of the brush, through holes in the ceiling of the gin aforesaid (instead of being taken by the wing brush wholly from the *front* side of the gin, under the saw cylinder, as has always heretofore been done), destroys this *front current*, so as to permit all the motes and other substances which are specifically heavier than the cotton, to fall freely on the floor; a large portion of which has heretofore been carried by this front current through the gin into the lint room with the ginned cotton; all which arrangements, together with the guard attached to the moting grates (and which is also a patented improvement), enable this machine to deliver the cotton into the pickroom in a more uniform and perfect manner than has

heretofore been done, and have thereby greatly enhanced the value and price of the cotton ginned on it.

These improvements of Mr. Carver are considered by planters and the cotton interest, in reference to the cotton gin, as subordinate only to the original invention.

WOOD-WORKING MACHINES.

Messrs. Ball & Rice, of Worcester, Mass., exhibited at our last Fair three machines for the purpose above-named, all of very superior workmanship and excellent construction, viz: Daniel's Improved Planing Machine, which has recently been much improved, embracing advantages of a decidedly superior character. A Tenoning Machine, used for making tenons of all lengths and sizes usually required, in hard or soft wood. It makes the tenon and copes either or both sides at the same operation. To it there is attached an apparatus for boring with augers, from $\frac{1}{4}$ to $1\frac{1}{2}$ inches in diameter. A Sash-moulding and slat machine was also exhibited by them. Our committee awarded a silver medal to the Planing machine, and one also to the Tenoning and Sash-moulding machines. A. C.

CRANE'S SELF-ACTING CHAIN STOPPERS.

This apparatus was exhibited at our last Fair. It consists of a cast-iron ridge, permanently secured to the deck inside of the hawse holes, over which the chain is hove in, each link is thus canted flat, upon which the pawl falls and stoppers it. The chain is elevated by the iron ridge as high as the slope of the hawse-pipe will admit, and not allow the chain to interfere with the top of the hawse-pipe when running out. The socket in which the upper end of the pawl works is placed at such distance above the hawse hole, as to allow the pawl to come in contact with the chain, so that the bottom part of the link will bear against the after part of the iron ridge, and the top part of the link against the centre of the pawl.

The top of the ridge is placed about 18 inches abaft the hawse-pipe, except where the distance from the windlass to the hawse-pipe is 12 to 15 feet, then the ridge is placed off from 2 to 3 feet, according to the distance between these two points. The use of

the devil's claw is entirely superceded in this arrangement, and it has proved a never-failing stopper against surging or slipping around the windlass. A. C.

READING'S CORN-SHELLER.

This machine was in operation at our last Fair, and in the estimation of those who witnessed it, fully sustained all that has been claimed for it. The corn was thrown into the hopper with a scoop-shovel, as fast as one man could deliver it, and shelled clean from the cob without injury to the grain, and the cobs and grain delivered separately. The machine is very simple in its construction, and we should think not liable to get out of order. It will undoubtedly prove a valuable acquisition to large producers of this invaluable grain. The power applied on this occasion, we did not ascertain. A. C.

ENGRAVED GLASS REFLECTING DOOR PLATES.

Mr. C. L. Osborn, No. 177 East 20th-st., New-York, exhibited a new invention applicable to the object above stated. Its appearance was beautiful, and the ease with which it can be kept clean and in order, enhances its value. It is thus constructed: There are three plates of glass put together enclosed in a neat and ornamental frame; the first or outer plate is of pure polished glass; the second is the plate on which the name or number is engraved, and is of the ruby or fleshed variety of glass; the third is a glass plate called the reflector, one side of which is permanently silvered, and serves to illuminate the lettering, figures, and ornamental parts, producing on the surface a perfect representation of them all; the ruby and silver combined, present a beautiful appearance. These are furnished at about the ordinary cost of silver engraved door plates, and are more durable, and it will be perceived that they may be kept clean and fresh with very little labor. A. C.

LAVA WARE.

Dr. Wm. H. Smith, No. 31 Insurance Building, 51 Wall street, New-York, exhibited specimens of this ware, consisting of tileing, manufactured from the refuse mineral products of iron, copper,

and analogous reducing furnaces for smelting ores. The chemical analysis of the ware exhibits the following constituent elements: Silex 51, lime 21, alumina 17, combined with traces of carbon, phosphorus, sulphur, manganese, potash and magnesia. These ingredients having been fused together in the cupola or reverberatory furnace, are subsequently moulded, cast, or rolled, and then carefully annealed. The resulting mineral compound is aptly designated *lava*, from its resemblance to volcanic rocks in mode of formation, general constituents, and characteristic properties.

Every metallic reducing furnace, in which ores are smelted in combination with mineral fluxes, is in reality a miniature volcano, and it only needs the application of those scientific principles involved in the general laws of crystalization to render the mineral products of these furnaces of great practical utility. The utilization of these molten mineral products, without any subsequent fusion or re-melting, seems to be an important feature in the mode of manufacture patented by Dr. Smith, and, if successful, will render his improvement exceedingly valuable as a source of economy and importance to iron masters.

The specimens exhibited present the appearance of polished marble, are more dense and harder than any kind of limestone; its durability for architectural purposes admits of no doubt, and the exceedingly liquid form in which it is received from the reducing furnaces, render it susceptible of adaptation to an almost unlimited variety of forms and applications. Taking into consideration the vast amount of material which may thus be redeemed from waste, adds greatly to the value of the invention. The cost of moulding and annealing the lava is said to be diminished in proportion to the capacity of the reducing furnace from which it is obtained, and three thousand tons can be manufactured per week with but little more expense than would be required for three hundred tons.

AMES' SHOVEL MANUFACTORY.

The Ames' shovel manufactory, of which we propose to give a brief account, is the most extensive in the world. Its headquarters are at the village of North Easton, Mass., but it has

branches in the neighboring towns of West Bridgewater, Braintree, and Canton. At these places it occupies eleven waterfalls, which turn the 37 waterwheels, required to operate the 15 triphammers, and various other machinery, employed in the manufacture of shovel blades. At the branch shops, the shovel blades are welded, hammered, plated, and smoothed, under the triphammers; and the black scale is removed from the cast steel plates, by grinding. From these shops they are taken to the finishing shops in North Easton, where they are finished, under the immediate personal superintendence of the proprietors.

At North Easton there are 12 workshops, two of which are built of stone, and are among the finest buildings of the kind in the country. One of these, the main finishing shop, is 527 feet in lenght, two stories in height, and has an L sixty feet long, and an engine house connected with it. A steam engine of 120 horse power, operates the machinery in this building. Opposite this building is a hammer shop in course of completion, 154 feet long by 70 feet wide, with an L of 35 feet in length, which contains a splendid engine of about 190 horse power; attached to this engine is a fly wheel, 20 feet in diameter, weighing about 12 tons, which is to operate eleven new triphammers.

This establishment gives employment to over 300 men; uses three tons of the best foreign bar iron, and two tons of best English cast steel, daily, and turns out an average of more than 2400 shovels and spades, each day, of various styles and prices.

Every Ames shovel is the result by division of labor, aided by apt machinery, of nearly 50 different processes, performed by as many men; this not including the making of the handle. In this establishment the labor of making the shovel, is divided into upwards of 50 distinct branches; each workman learns to perform but one of these, and is paid so much per dozen for what he does. Such facility and perfection have been reached in the manufacture of the various parts, and such the number of persons employed on each shovel, that on an average a shovel is now produced in every 15 seconds, during working hours.

The Ames shovel is made of the very best materials, and is very carefully inspected through every stage of its manufacture. If it is found defective in any of its parts, so as to injure its quality, it is condemned as refuse; so careful is the inspection, that a defective shovel rarely escapes the scrutiny of the inspectors.

This is probably the oldest shovel manufactory in the country. For more than 50 years its products have had a name and fame throughout the country, but never did they enjoy a more pre-eminent reputation than at the present time Notwithstanding the proprietors have been constantly enlarging and improving their works, they have found themselves unable to supply the greatly increased demand for their shovels, which exists in all parts of the American continent, Australia, and even from Old England herself.

The managers awarded to Messrs. Oliver Ames & Sons, a gold medal, at the exhibition, October, 1853.

SYSTEMS FOR CUTTING AND FITTING LADIES' DRESSES.

These consist of plans and rules, simplified and laid down, so that the art may be readily understood and communicated to any one having occasion or a desire to practice the art. The cut and fit of a lady's dress is a matter of much greater importance than is generally supposed. Judging from the very large prices which are exacted by the few who have become adepts in this department of mechanism, we feel it a duty to recommend to the attention of the sex generally an examination of these "Systems," with a view to the more general diffusion of a practical knowledge of this important art.

There were three exhibitors in competition at our late Fair. The committee to whom the subject was referred reported that they "considered them all accurate. The system presented by Mrs. Demarest may be easily understood and carried out, and from its simplicity claims the preference." A. C.

AN ADDRESS,

DELIVERED AT CASTLE GARDEN,

October 16th, 1853, at the opening of the 26th Annual Fair,

BY THE

Hon. HENRY MEIGS.

Ladies and Gentlemen—The managers of the Twenty-Sixth Annual Fair call on me to address you at this opening thereof. I obey cheerfully, and beg your indulgence while I try to supply the place of one more able to do justice to the cause. And allow me first to pause at the sad reminding we have had, within a few days past, of the true condition of all things; their brief existence and rapid dissolution. We have had taken from us two Presidents in one week. The clarion voice of our venerable President Tallmadge never more will be heard, proclaiming the victories of American Industry; urging always, with deep feeling, our home with all its virtues, all its art, and industry; all its independence and prosperity, all that could establish it as the grand model republic—the grand oasis of moral and physical power. His voice is at last hushed; but the remembrance of it will last as long as a patriot can be found here.

And the venerable Dickerson too, whose years of wisdom, the last forty of them, were devotéd to American industry, availing himself of the high rank justly awarded to him in the Senate and in the cabinet of the United States, to give spread and gravity to those noble sentiments which grace and which form our greatness. Home work forever! Peace to their manes! They will not be forgotten while anything American remains.

You know without my telling you what our duty now is. Onward! Onward! is the general order of to-day. The future calls for us. Like the airy Temple of Fame, drawn by our artist Cole, we aspire to that grand scene where America will form the model never dreamed of in romance. After the lapse of ages, in which the rich sneered at the humble rustic, who, behind the country fence labored hard to raise his bread, the lofty men of the day calling him a boor, a villein, a bogtrotter, a new time has come over us. Queens and Kings now find the propriety of doing honor to all the labors of the farm. Science is called to it. Acres that yielded ten bushels of wheat are required to give forty on an acre—and they do it. Our Institute boasts of several members to whom the countryis indebted for their scientific agriculture. One member particularly to whom our country is indebted, and who has heard him' from Maine to Ohio, has deserved the highest reward for his agricultural philosophy, is not more profound than the results are profitable to mankind. Need I name him?

The work was formerly left to slaves; it is now become the glory of freemen.

The mechanic arts were on no better footing. We know the painters and the sculptors of those thousand years, but no mechanics. The myriads of interesting works of the mechanics failed to give them fame. What a contrast with the present race of men! It is not too much to say that our statesmen, warriors, poets, historians, scientific men, painters and sculptors, have a pale fame, while that of our great mechanics command the unqualified admiration of all mankind. No one has yet ceased to view with wonder the animated engines now driving the world of men and matter over hill and over dale, through mountains, over rivers, up the great rivers, over every ocean. The mechanic is company for sovereigns now; Victoria takes him by the arm and visits his house. Your last President began life a mechanic, and it is a mechanic who now does honor to the mayoralty of your great metropolis.

The true order of society is, first, the farmer, next the mechanic, and last the artist. Our American Institute charter speaks

this truth plainly when it declares us incorporated for the purpose of promoting agriculture, commerce, manufactures, and the arts. Commerce is common to all classes. It is the great train on land, the steamship by sea. It is made to carry all. But you see that the arts must come last, of sheer necessity, and in the progress of nations we find it so.

Our generation is a new one, composed of men born on a new soil, in a new climate, and of men who, leaving the old nations, old land and skies behind them, come here, and in one sense may be said to be born again. With what new aspirations are all filled as they breathe this new air, stretch their vision on every side, and not only see no despot or his minions, but nothing to remind them that there is any law in existence. They soon find that those who came here before them had become self-respectful, self-controlling, capable of uniting in huge masses of various opinions, with every sort of argument, noise, oratory of all sorts, and no arms. This seeming miracle is exhibited all over our land, from the Atlantic to the Pacific ocean; and hitherto that vast conservative power has not merely preserved a sacred peace, but has never impeded the immense progress of the nation in all the peaceful arts and works.

La Place, one of the greatest, if not the greatest of astronomers, calls his great work "Mechanique Celeste," the Celestial Mechanism. So may we now call our great republic the Constitution Mechanique. No member of it is pardonable for idling away his time. No matter how rich, if he would be respected by others or respect himself, he must pursue some honest business. There is not room here, between the two great oceans, for a single man to do nothing in. The first great lesson we receive here is, Take care of thyself, for there is no one to take care of you—no one to whom he owes allegiance and claims protection.

You remember well how great an alarm has been felt in Europe whenever some great machine has appeared, for fear that handwork would be no longer wanted. Sometimes the workmen have destroyed by violence the dreaded machines. That fear seems to have ceased altogether; population has increased at a rapid rate

so fast, that about as fast as a machine can make a shirt we find a back ready for it. It is now said that our 20,000 miles of railroads have caused an increase in the number of horses. That one railroad always breeds many is beyond a doubt, for the one enables us to carry all the material for another; so that the beginning of one road helps us to build to the end, and that carries us to the beginning of another.

When we think of mechanics, it is only necessary to begin with the makers of iron, the Vulcans of the world. Who can grasp by his mental power the mysterious grandeur of that one metal and its workers! One may begin, but no man has ever summed it up. Begin with a small needle, a tack, a nail, a bolt, a rod, a bar, a hoop, a tack hammer, a sledge hammer, a forge hammer of a ton, a lancet, a sword, a pistol, a Paixhan 100-pounder, a chain for a squirrel, a chain cable for a ship of 3,000 tons, a railroad, a railway bar 40,000 miles in length, a sewing machine, a marine steam engine. Those who are the cunning workers in iron hold the muscles and tendons of our power in their hands.

Those who build all our dwellings, factories, &c., should be held next in rank. He that is no mechanic can hardly conceive what an amount of knowledge is necessary to manage iron or build a house. Although iron has been used thousands of years, still every year adds something new to its better development; and notwithstanding immense experience in architecture for ages, numerous improvements have been made within a few years. Probably the iron will ultimately prevail in architecture, so that, after the building of houses for thousands of years, so destructible that of immense cities none but public massive edifices remain visible, when cities shall be built of iron their ruins after thousands of years will be standing. Fire alone soon reduces to ashes and dust all former architecture.

We believe that our speed on railroads at sixty to one hundred miles per hour is the ultimatum of velocity for men and goods; but we already have plans suggested for exhausting the air in metallic tubes, and by means of suitable pistons drive parcels of goods through almost instantaneously; at any rate, as fast a a

ball from an air gun, for the exhausted tube is but a large one. It has been supposed that messages can be sent faster than by our present telegraph, considering the small time lost by manipulations. Since I wrote these lines, a company is proposed, with a capital of half a million of dollars, to lay such a tube of two feet calibre, from Boston to this city.

Naval architecture, how grand at this day! What a science is here! Magnificent mechanism! And the end is not yet. Some seven years ago some men here commenced planning ships so long as to cover two or three Atlantic waves, and thus move as steadily as our river steamers do over our little waves. Immediately we heard an echo from England. One proposed a ship of ten thousand tons; another a church, a garden, and suitable carriages for exercise around the decks, a chapel, a theatre. Some laughed, but not all. Now we see vessels proposed of iron, in compartments, of 6,000 to 8,000 tons, to sail at the rate of twenty-five miles an hour

The printing press—Hoe! What a press that is before us! We have printers here among us not yet beginning to be old, who have worked the old world's hand press at the rate of three hundred copies an hour by two men. Now, that press turns out ten thousand an hour with six men and boys; and do we know how to value it? We might by great assiduity make a table of the value of iron; but the value of the press cannot be measured for this world, much less can we sum up its power of spreading knowledge, without which, to some, there can be no Heaven. It truly makes knowledge run to and fro in the earth. It has made Christianity belt the globe already, and its less sure triumphs however slow they may be, are now visible from our housetops, over the Saracen at the Bosphorus, and over the idolators of China, a fourth part of the inhabitants of the earth.

The press, which immortalizes doctrines so that age after age the good things recorded by it stand immutable, that successive generations of men may forever have the chance to learn all that is good proceeding from human genius, or, more blessed infinitely, that which God has revealed for our joy here and to all eternity.

The evil which accompanies it is not fatal so long as the press is free. Those who see the great truths known to even the pagan philosophers, hold all their brightness, and the press renders it possible to put them before every human being, such as the *aureum monitum* of the ancients, the golden maxim, "He that does evil with pleasure, the pleasure soon vanishes, but the evil is everlasting; while he that does good with pain, the pain soon passes off, but the good is everlasting."

In agriculture, the vast aid given to this, the most laborious of our duties, by mechanics, is wonderful. The whole civilized world looks on as McCormick cuts down the standing grain faster than ten or twenty times the number of men formerly did; and the grand point gained by this mechanism is, that at the right time precisely the harvest is made, while yet the sun shines. No loss by catching weather, as farmers say. And it is now proposed to till the soil deeper and better than spades or ploughs can do it, by four horses and two men, as many acres in one day, as 160 men could dig with a spade. It is a forking machine, attempted here a few years ago, and more recently in England, with the future prospect of perfect success. Here again, time and weather are to be saved. The land, when in good order to be tilled, should be done, if possible, in a day, so that it may be ready at the right moment, to receive the seed. The advantages to flow from such operations, on a national scale, if estimated at a saving of five per cent only, would be to England, with her agricultural annual value of three thousand millions of dollars, the small sum of one hundred and fifty millions of dollars—three years income of California gold! That is the value of the simple machine. What are mechanics good for? Let our politicians do as much good as that, in three thousand millions of years, if they can.

It is not possible to look unmoved with wonder and pleasure upon those power looms, as they are well called. No human muscle, no sweat, not so much care as in driving a horse in a wagon; the human being sees it move with a rapidity, which renders the flying shuttle utterly invisible, while the accuracy of the weaving is mathematical. Let him who does not honor mechanics, make his own loom, and weave his own cloth by hand, as of old.

Agriculture! While mechanics are making all the rest of the world move, the farmer, much of whose work must be done by his hands, requires the aid of science also. The work is no longer to be left to ignorant men. The mighty men of the world never saw before so clearly as they see it now, that they must lend a hand to the farmer. The kings and queens no longer call them boors, peasants, clodhoppers or villeins, as they once did. No; they treat the farmers as well as they do the best men in the kingdom. They practice personally in some cases. Albert, to his honor, breeds hogs; and Victoria, chickens. All the legislatures of the world are chartering agricultural societies. Within the past seven years such improvements have been made, that it is fair to conclude, that the crops of the United States have been increased several per cent—no doubt five per cent; and since our crop is more than that of Great Britain, we may safely say, that the annual gain, resulting exclusively from the application of science to farming, amounts to more than one hundred and fifty millions of dollars, a year.

As to the fine arts, they are already well founded among us, commencing a hundred years ago with a Copley and a West, who will lose nothing for some centuries yet to come- We have recently produced artists of great merit. Our Powers are manifest in the beautiful statue of the Greek Slave, who lost nothing by standing in the presence of the whole artistic world, in the crystal palace of London, and who now, at home, in our crystal palace, adorns so sweetly the scene of magnificence there around her. The arts are in progress with every thing else human. The crystal palaces themselves, rising to the rays of the sun, glittering like the far darting light from the fresnel light of the lighthouse, are entirely novel—such palaces as never were dreamed of by the charming oriental writers of the thousand and one tales, in the Arabian Nights Entertainments. Aladdin never raised such diamond architecture, with all the powers of the genii of his wonderful lamp.

In this rapid speed at which we go, let us, with all our might, strive to do nothing but that which is good in the sight of our Heavenly Father, that he may give us his light, infinitely more precious than millions of suns.

ANNIVERSARY ADDRESS,

BEFORE THE AMERICAN INSTITUTE,

On the 20th day of October, 1853.

By the Hon. WM. H. SEWARD, of the U. S. Senate.

THE TRUE BASIS OF AMERICAN INDEPENDENCE.

Fellow Citizens—I do not know how lightly you, who are hurried so fast through the ever-changing panorama of metropolitan life, may regard the quiet scenes of this unpretending festival, appointed and arranged with so much care by the American Institute; but I confess for myself, that coming from a distant and rural home, and so being never more than an occasional spectator here, I find always the same first freshness in these autumnal shows of flowers, and fruits, and animals of subsistence, fleece and burden, trained and perfected by hard yet gentle hands; and these annual trials of the skill of emulous, yet unambitious men and women, in the use of the spade and the plow, the forge and the furnace, the dairy and the needle, the spindle and the loom, innocent in their nature, yet beneficent in their effect, by stimulating invention and enterprise, while they faithfully mark, as years roll on, the progress which our country is making in arts and civilization, never fail to excite within me sympathies and emotions more profound and pleasing, than any State pageant which I have witnessed at home, or the most imposing demonstration of military power that can be seen in any other and less favored land.

Society divides concerning that progress. Those who are occupied with their own personal cares, and apprehensive of evil in every change, look upon it with indifference or distrust; others,

knowing that in a Republic constituted as this is, there is always a restless activity towards either peace or war, virtue or vice, greatness or shame, devote themselves to the duty of regulating that activity, and giving it a right direction.

The members of the American Institute are of this class. Having constantly sympathized with them heretofore, when their unremitted labors secured neither rewards nor favor, I rejoice in meeting them now under more propitious circumstances. I congratulate you, Messrs. Reese, Livingston and Hall, Stillman, Meigs and Chandler, and others, associates, that your institution has been adopted as a model by many towns, and by all the counties in this State, by the State itself, and by many other States; and that your instructions and example, patiently continued through so many years, have at last induced the nation itself to consent to appear, and to win some some significant trophies, in the Exhibition of Universal Industry, already held in London, and to inaugurate another and brilliant one in the world's new capital, which we are founding on this yet rude coast of a recently impassable ocean.

Nevertheless, I have been for many reasons habitually averse from mingling in the sometimes excited debates which crowd upon each other in a great city. There was, however, an authority which I could not disobey, in the venerable name and almost paternal kindness of the eminent citizen, who so recently presided here with dignity and serenity all his own; and who transmitted the invitation of the Institute, and persuaded its acceptance!

How sudden his death! Only three weeks ago, the morning mail brought to me his announcement of his arrival to arrange this exhibition, and his summons to me to join him here; and the evening dispatch on the self same day, bore the painful intelligence that the lofty genius which had communed with kindred spirits so long, on the interests of his country, had departed from the earth, and that the majestic form which had been animated by it, had disappeared forever from among living men.

I had disciplined myself when coming here, so as to purpose to speak no word for the cause of human freedom, lest what might

seem too persistent an advocacy might offend. But must I, therefore, abridge of its just proportions the eulogium which the occasion and the character of the honored dead alike demand.

The first ballot which I cast for the chief magistracy of my native and most beloved State, bore the name of James Tallmadge, as the alternate of De Witt Clinton. If I have never faltered in pursuing the policy of that immortal statesman, through loud reproach and vindictive opposition during his life, and amid clamors and contentions, often amounting almost to faction, since his death, I have found as little occasion to hesitate or waver in adhering to the counsels and example of the illustrious compeer, who, after surviving him so many years, has now been removed, in ripened age, to the companionship of the just. How does not time vindicate fidelity to truth and to our country! A vote for Clinton and Tallmadge in 1824, what censure did it not bring then? Who will impeach *that* ballot now?

A statesman's claim to the gratitude of his country, rests on what were, or what would have been the results of the policy he has recommended. If the counsels of James Tallmadge had completely prevailed, then not only would American forests, mines, soil, invention and industry, have rendered our country, now and forever, independent of all other nations, except for what climate forbids; but then, also, no menial hand would ever have guided a plough, and no footstep of a slave would ever have been tracked on the soil of all that vast part of our national domain, that stretches away from the banks of the Mississippi to the far western ocean.

This was the policy of James Tallmadge. It was worthy o New-York, in whose name it was promulgated. It would have been noble, even to have altogether failed in establishing it. He was successful, however, in part, though only through unwise delays and unnecessary compromises, which he strenuously opposed, and which, therefore, have not impaired his just fame. And so in the end, he more nearly than any other citizen of our time, realized the description of the happiest man in the world, given to the frivolous Crœsus by the great Athenian: "He saw his

offspring, and they all survived him. At the close of an honorable and prosperous life, on the field of civic victory, he was rewarded with the honors of a public funeral, by the State that he had enriched, adorned and enlarged."

Gentlemen of the American Institute, Dr. Johnson truly said—that the first man who balanced a straw on his nose; the first man who rode three horses at a time; in short, all such men deserved the applause of mankind, on account, not of the use of what they did, but of the dexterity which they exhibited; for that every thing which enlarged the sphere of human powers, and showed man that he could do what he thought he could not do, was valuable. I apprehend that this is a true exposition of the philosophy of your own most useful labors.

The increase of personal power and skill diminishes individual dependence; and individual independence, when it pervades the whole State, is national independence. It is only when, through such individuality of its members, a nation attains a certain independence, that it passes from that condition of society, in which it thinks, moves, and acts, whether for peace or for war, for right or for wrong, according to the interest or caprices of one, or of a few persons, (a condition which defines monarchy or aristocracy,) to that better condition in which it thinks, moves, and acts, in all things, under the direction of one common interest, ascertained and determined by the intelligent consent of a majority, or of all its members; which condition constitutes a republic or democracy. So democracy, wherever it exists, is more or less perfect, and, of course, more or less safe and strong, according to the tone of individuality maintained by its citizens.

Of all men, and of all nations, it seems to me that Americans, and this republic, have at once the least excuse for a want of independence, and the most need for assuming and maintaining it.

No other nation has equal elements of society and of empire. Charlemagne, when founding his kingdom, saw, or might have seen, that, while it was confined by the ocean and by the Mediterranean on the west and on the south, it was equally shut in northerly and eastwardly by river and mountain barriers, which

would be successfully maintained forever, by races as vigorous and as independent as the Franks themselves. Alfred, the Great, saw so clearly how his country was circumscribed by the seas, that he never once thought of continental empire. The future careers of France and England may, like the past, be filled up with spasmodic efforts to enlarge fixed dominions by military conquests, and agricultural and commercial colonies, but all such attempts, even if they should be as gigantic as those which have heretofore been made, will, like them, be followed by disastrous reactions, bringing the nations back again, and confining them at last within their natural and earliest borders. No political system can be held together permanently, by force suspending or overpowering the laws of political affinity and gravitation. Unlike those nations, we are a homogeneous people, occupying a compact and indivisible domain, peculiarly adapted to internal commerce, seventeen times greater than that of France, and an hundred times more extended than that of Great Britain. While it spreads eastward and westward across the continent, nature has not interposed, nor has man erected, nor can he raise, a barrier on the north or on the south, that can prevent any expansion, that shall be found necessary, provided only that our efforts to effect it, shall be, as they ought to be, wise, peaceful, and magnanimous. Only Russia excels us in territorial greatness. But while all of her vast population are not merely willing, but even superstitious subjects, of an unmitigated despotism, more than four-fifths of them are predial slaves. If such a population could, within any short period, rise up to a state of comparative social elevation, such a change would immediately lead to seditions, that must inevitably result in dismemberment of the empire.

Why should we go abroad for mineral materials, or for metallic treasures, since this broad domain of ours is even more plentifully than any equal portion of the earth, stored with marl, gypsum, salt, coal, quicksilver, lead, copper, iron and gold? Where shall we find quarries and forests, producing more amply the materials for architecture, whether for the purposes of peace, or of war on land or on sea? Our cities may be built of our own free-stone, marble and granite; and our southern coasts are fringed with

pine and live oak, while timber and lumber, diversified and exhaustless, crown our northern mountains and plains.

Why should we resort to other soils and climates for supplies of subsistence, if we except spices, dyes, and some not indispensable tropical fruits, since we have sugar, rice and cotton fields stretching along the shores of the Gulf, long mountain ranges, such as those of Virginia and Vermont, declivities in which the vine delights, along the banks of the Ohio, and the endless prairies, fertile in all cereal grains, tobacco, flax and hemp, that border the lakes and the Mississippi, and their widely-branching and far-reaching inlets and tributaries?

If there is virtue in blood, what nation traces its lineage to purer and gentler stocks? And what nation increases in numbers, by either immigration or by native births, more rapidly? And what nation, moreover, has risen in intelligence so equally or so fast?

If it be asked whether we have spirit and vigor proportioned to our natural resources, I answer, look at these thirteen original States. Their vigor is not only unimpaired, but it is increasing. Then, look at the eighteen others, offshoots of those stocks. They are even more elastic and thrifty. Consider how small and how recently planted were the germs of all this political luxuriance, and to what early hardships and neglect they were exposed. Can we not reasonably look for a maturity full of strength and majesty?

Moreover, the circumstances of the age are propitious to us. The nations on this continent are new, youthful and fraternal, while those existing on the other are either lying in hopeless debasement, or are preparing to undergo the convulsions of an indispensable regeneration. What power, then, need we fear? What power, if we were in danger, could yield us protection, or even aid?

While our constitutions and laws establish political equality, they operate to produce social equality also, by preventing monopolies of land and great accumulation of wealth; and so they afford incentives to universal activity and emulation. Why, then, should not the American citizen and the American Republic be

consciously independent in all things, as in all things they are safe and free?

Such independence should be attained and preserved, not by a few only, but, as far as possible, by all citizens. It is not less essential that the farmer, the mechanic, and the laborer shall enjoy it, than that it shall regulate the action of the merchant, the lawyer and the statesman. Every member of the State may become a soldier, and even a senator. He can never be less than an elector. What does not the Republic owe to Sherman and Franklin? Yet, they were mechanics. What would not have been its fate but for the independence of the captors of Andre? Yet, Paulding, Williams and Van Wart were mere laboring men.

Virtue is confessedly the vital principle of the Republic; but virtue cannot exist without courage, which is only the consciousness of independence.

We are bound to recommend republican institutions to the acceptance of other nations. Can we do so if we are content to be no wiser, no more virtuous, no more useful to humanity, than those to whom such institutions are denied? Responsibility is always in proportion to the talent enjoyed. Neither man nor nation can be wise or really virtuous or useful, when dependent on the caprice or even on the favor of another. Is there one among the tens of thousands of inventions in the Patent Office that was made by a slave, or even by one whose blood had been recently attainted by slavery? Peter the Great, master of so many millions of slaves, resorted to the shop of a free mechanic of Saardam to learn the mystery of ship-building. His successor, Nicholas, employs Whistler, a Massachusetts engineer, to project his railroads; Ross Winans, a Baltimore mechanic, to construct his locomotives; and Orsamus Eaton, a carriage maker of Troy, to construct his cars. Do you wonder that, loving freedom for such fruits, I also have set my face firmly against slavery?

If we act hereafter as we have acted hitherto, we shall be continually changing old things, old laws, old customs, and even old Constitutions, for new ones. Does any one doubt this? Have we not already a third Constitution in this State? Has any one

of the States a Constitution older than twenty-five years? But political progress, if not regulated with moderation, may move too fast; and if not wisely guided, will lead to ruin. It is the people themselves, and not any power above or aside from them, that alone must regulate and direct that progress. Be they never so honest, they cannot discharge so great a political trust wisely, except they act on such generous impulses, and with such lofty purposes, as only bold and independent men can conceive. The people must be independent, or this republic, like all republics that have gone before it, must be ruled and ruined by demagogues.

I am far from supposing that we are signally deficient in independence. I know that it is a national, a hereditary and a popular sentiment; that we annually celebrate, and always glory in our independence. We do so justly, for nowhere else does even a form or a shadow of popular independence exist; while here it is the very rock on which our institutions rest. Nevertheless, occasions for the exercise of this virtue may be neglected.

We hold in contempt, equally just and profound, him who imposes and him who wears a menial livery; and yet, I think that we are accustomed to regard with no great severity the employer who exacts, or the mechanic, clerk, or laborer who yields political conformity in consideration of wages. We insist, as we ought, that every citizen in the State shall be qualified by education for citizenship, but we are by no means unanimous that one citizen, or class of citizens, shall not prescribe its own creed in the instruction of the children of others. We construct and remodel partizan formulas and platforms with changing circumstances, with almost as much diligence and versatility as the Mexicans, and we attempt to enforce conformity to them with scarcely less of zeal and intolerance, not indeed by the sword, but by the greater terror of political proscription. We resist argument, not always with argument, but often with personal denunciation, and sometimes even with combined violence. We differ, indeed, as to the particular errors of political faith that shall be corrected by this extreme remedy, but, nevertheless, the number of those who altogether deny its necessity and suitableness in some cases, is very small.

We justly maintain that a free press is the palladium of liberty, and yet, mutually proscribing all editorial independence that is manifested by opposition to our own opinions, we have only attained a press that is free in the sense that every interest, party, faction or sect, can have its own independent organ. If it be still maintained, notwithstanding these illustrations to the contrary, that entire social independence prevails, then, I ask, why is it so necessary to preserve with jealousy, as we justly do, the ballot, in lieu of open suffrage; for, if every citizen is really free from all fear and danger, why should he mask his vote more than his face? Believe me, fellow-citizens, independence always languishes in the very degree that intolerance prevails. We smile at the vanity of the factory girl at Lowell, who, having spent the secular part of the week in making calicoes for the use of her unsophisticated countrywomen, disdainfully arrays herself on Sundays exclusively in the tints of European dyes; and yet, we are indifferent to the fact that beside a universal consumption of foreign silks, excluding the silk worm from our country, we purchase, in England alone, one hundred and fifty millions of yards of the same stained muslins. We sustain, here and there, a rickety, or at best a contracted iron manufactory, while we import iron to make railroads over our own endless ore fields; and we carry our prejudices against our struggling manufacturers and mechanics so far as to fastidiously avoid wearing on our persons, or using on our tables, or displaying in our drawing-rooms, any fabric, of whatsoever material, texture or color, that in the course of its manufacture has to our best knowledge and belief ever come in contact with the honest hand of an American citizen. In all this we are less independent than the Englishman, the Frenchman, or even the Siberian.

It is painful to confess the same infirmity in regard to intellectual productions. We despise, deeply and universally, the spoiled child of pretension, who, going abroad for education or observation, with a mind destitute of the philosophy of travel, returns to us with an affected tone and gait, sure indications of a craven spirit and a disloyal heart. And yet how intently do we not watch to see whether one of our countrymen obtains in Europe

the honor of an aristocratic dinner, or of a presentation, in a grotesque costume, at court! How do we not suspend our judgment on the merits of the native artist, be he dancer, singer, actor, limner, or sculptor, and even of the native author, inventor, orator, bishop or statesman, until, by flattering those who habitually depreciate his country, he passes safely the ordeal of foreign criticism, and so commends himself to our own most cautious approbation. How do we not consult foreign mirrors for our very virtues and vices, not less than for our fashions, and think ignorance, bribery and slavery quite justified at home, if they can be matched against oppression, pauperism and crime in other countries!

On occasions, too, we are bold in applauding heroic struggling for freedom abroad; and we certainly have hailed with enthusiasm every republican revolution in South America, in France, in Poland, in Germany and in Hungary. And yet how does not our sympathy rise and fall with every change of the political temperature in Europe? In just this extent we are not only not independent, but we are actually governed by the monarchies and aristocracies of the Old World.

You may ask impatiently, if I require the American citizen to throw off all submission to law, all deference to authority, and all respect to the opinions of mankind, and that the American Republic shall constantly wage an aggressive war against all foreign systems? I answer, no. There is here, as everywhere, a middle and a safe way. I would have the American citizen yield always a cheerful acquiescence, and never a servile adherence, to the opinions of the majority of his countrymen and of mankind, whether they be engrossed in the forms of law or not, on all questions involving no moral principle; and even in regard to such as do affect the conscience, I would have him avoid not only faction, but even the appearance of it. But I demand, at the same time, that he shall have his own matured and independent convictions, the result not of any authority, domestic or foreign, on every measure of public policy, and so, that while always temperate and courteous, he shall always be a free and outspeaking censor, upon not only opinions, customs and administration, but even upon laws and constitutions themselves. What I

thus require of the citizen, I insist, also, that he shall allow to every one of his fellow-citizens. I would have the nation also, though moderate and pacific, yet always frank, decided and firm, in bearing its testimony against error and oppression; and while abstaining from forcible intervention in foreign disputes, yet always fearlessly rendering to the cause of Republicanism everywhere, by influence and example, all the aid that the laws of nations do not peremptorily, or, in their true spirit, forbid.

Do I propose in this a heretical or even a new standard of public or private duty? All agree that the customary, and even the legal standards in other countries are too low. Must we then abide by them now and forever? That would be to yield our independence, and to be false towards mankind. Who will maintain that the standard established at any one time by a majority in our country is infallible, and therefore final? If it be so, why have we reserved by our Constitution, freedom of speech, of the press, and of suffrage, to reverse it? No, we may change everything, first complying, however, with constitutional conditions. Storms and commotions must indeed be avoided, but the political waters must nevertheless be agitated always, or they will stagnate. Let no one suppose that the human mind will consent to rest in error. It vibrates, however, only that it may settle at last in immutable truth and justice. Nor need we fear that we shall be too bold. Conformity is always easier than contention; and imitation is always easier than innovation. There are many who delight in ease where there is one who chooses, and fearlessly pursues the path of heroic duty.

Moreover, while we are expecting hopefully to see foreign customs and institutions brought, by the influence of commerce, into conformity with our own, it is quite manifest that commerce has reciprocating influences, tending to demoralize ourselves, and so to assimilate our opinions, manners, and customs, ultimately to those of aristocracy and despotism. We cannot afford to err at all on that side. We exist as a free people only by force of our very peculiarities. They are the legitimate peculiarities of Republicanism, and, as such, are the test of nationality.

Nationality! It is as just as it is popular. Whatever policy, interest, or institution is local, sectional, or foreign, must be zealously watched and counteracted; for it tends directly to social derangement, and so to the subversion of our democratic constitution.

But it is seen at once that this Nationality is identical with that very political independence which results from a high tone of individuality on the part of the citizen. Let it have free play, then, and so let every citizen value himself at his just worth, in body and soul; namely, not a serf or a subject of any human authority, or the inferior of any class, however great or wise, but a freeman, who is so because "Truth has made him free;" who not only, equally with all others, rules in the Republic, but is also bound, equally with any other, to exercise designing wisdom and executive vigor and efficiency in the eternal duty of saving and perfecting the State. When this nationality shall prevail, we shall no more see fashion, wealth, social rank, political combination, or even official proscription, effective in suppressing the utterance of mature opinions and true convictions; and so enforcing for brief periods, with long reactions, political conformity, at the hazard of the public welfare, and at the cost of the public virtue.

Let this Nationality prevail, and then, instead of keenly watching, not without sinister wishes, for war or famine, the fitful skies, or the even more capricious diplomacy of Europe; and instead of being hurried into unwise commercial expansions by the rise of credit there, and then back again into exhausting convulsions and bankruptcy by its fall, we shall have a steady and a prosperous, because it will be an independent, internal commerce.

Let this Nationality prevail, and then we shall cease to undervalue our own farmers, mechanics, and manufacturers, and their productions; our own science, and literature, and inventions; our own orators and statesmen; in short, our own infinite resources and all-competent skill, our own virtue, and our own peculiar and justly envied freedom.

Then, I am sure that, instead of perpetually levying large and exhausting armies, like Russia, and without wasting wealth in

emulating the naval power of England, and without practicing a servile conformity to the diplomacy of courts, and without captiously seeking frivolous occasions for making the world sensible of our importance, we shall, by the force of our own genius and virtue, and the dignity of freedom, take, with the free consent of mankind, the first place in the great family of nations.

Gentlemen of the Institute: From the earnestness with which the theory of Free Trade is perpetually urged in some quarters, one might suppose that it was thought that the cardinal interest of the country lay in mere exchanging of merchandize. On the contrary, of the three great wheels of national prosperity, Agriculture is the main one, Manufacture second, and Trade is the last. The cardinal interest of this and every country is, and always must be, Production. It is not traffic, but labor alone, that converts the resources of the country into wealth. The world has yet to see any State become great by mere trade. It has seen many become so by the exercise of industry.

Where there are diversified resources, and industry is applied to only a few staples, three great interests are neglected, viz: natural resources, which are left unimproved; labor, that is left unemployed; and internal exchanges, which a diversity of industry would render necessary. The foreign commerce, which is based on such a narrow system of production, obliges the nation to sell its staples at prices reduced by competition in foreign markets, and to buy fabrics at prices established by monopoly in the same markets.

This false economy crowds the culture of the few staples with excessive industry; thus rendering labor dependent at home, while it brings the whole nation, tributary to the monopolizing manufacturer abroad. When all, or any of the nations of Europe, shall, as well as ourselves, be found successfully competing with England in manufactures, then, and not till then, will the free trade she recommends, be as wise for others, as she now insists. But, when that time shall come, I venture to predict, that England will cease to inculcate that dogma.

The importance of maintaining such a policy as will result in a diversified application of industry, seems to rest on these impregnable grounds, viz: — 1st. That the use of indigenous materials does not diminish, but on the contrary, increases the public wealth. 2d. That society is constituted so, that individuals voluntarily classify themselves in all, and not in a few departments of industry, by reason of a distributive congeniality of tastes and adaptation of powers; and that, while labor so distributed is more profitable, the general contentment and independence of the people are secured and preserved, and their enterprise is stimulated and sustained.

I think it must be confessed now, by all candid observers within our country, that manufactures have become, in a degree, the exclusive employment of the citizens of the Eastern States; and yet they are precarious, and comparatively unprofitable, because our own patronage, so generously discriminating in favor of European manufacturers, enables them to make the desired fabrics sometimes at less cost; that the citizens of the Middle and Western States, are confined chiefly to the raising of staple breadstuffs, for which, while they have a great excess above the home consumption, resulting from the neglect of domestic manufactures, they find a market almost overstocked with similar productions, raised in countries as peculiarly agricultural as our own; and that the citizens of the Southern States, restrict themselves chiefly to the culture of cotton, of which, practically, they have the monopoly; that the annual enlargement of the cotton culture tends to depress its price, and that they pay more dearly for the fabrics which they use, than would be necessary if our own manufacturers could better maintain a competition with those of Europe.

These inconveniences would indeed become intolerable evils, if they were not compensated, in some measure, by the great increase of wealth, resulting from the immigration of foreign labor; and by the establishment of a new and prosperous gold trade, between the Atlantic States and California.

Why should these inconveniences be endured? Certainly not because we do not know that they are unnecessary. We jealously

guard our culture of breadstuffs and sugar, against the competition of the foreign farmer and planter in our own markets. Practically, our gold mining is equally protected. We also give an exclusive preference in our internal commerce to our own shipping. No one questions the advantage of these great departments of production. But it is not easy to see, how the equally successful opening of other domestic resources should not be equally beneficial.

Why should it be less profitable to supply ourselves with copper, iron, glass and paper from our own resources, and by our own industry, than it is to supply ourselves in the same way with flour, sugar and gold? Why should it not be as economical to manufacture our own cotton, wool, iron and gold, as it is to manufacture our own furniture, wooden clocks and ships? If mining and manufactures, generally, were not profitable in England, they would not be prosecuted there. If they are profitable there, they would be profitable here. You reply, that manufacturing labor is cheaper there. Yes, because you leave it there. If you offer inducements, it will come here just as freely as agricultural labor now comes. The ocean is reduced to a ferry. If you must depend on foreign skill for fabrics, I pray you bring that skill here, where you can sustain it with greater economy.

The advocates of dependence on foreign manufactures tell us that it is as well to sell gold and buy iron, as it would be to sell iron to buy gold. I reply, 1st. That, to the extent of our necessary consumption, having exhaustless resources and adequate industry or ability to procure it, we ought to buy neither. 2d. When Boulton, the associate of the great Watt, showed his iron manufactory, he said, "I sell here what all men are anxious to buy—power." It has been proved that a nation may sell gold for iron without gaining power, as many a nation has bought iron without securing it. But it is clear, that the nation that makes its own iron creates its own power.

It seems to be understood by the advocates of foreign manufactures here, that only those branches languish which have not sufficient vigor to be brought to maturity, by never so much pro-

tection. This is opposed to the experience of all mankind. There is not in France or in England a successful culture or manufacture that has not been made so by the application of national protection and patronage. The manufacturers of England are sustained, even now, by the sacrifice of agricultural labor there. The decline of agriculture is proved by a rapidly increasing emigration from the British Islands. What England calls free trade, is indeed a new form of protection, but it is protection nevertheless. She finds it equally effective and expensive. British commerce and British manufactures do indeed flourish, but British empire declines. The decline is seen in the tameness of England now towards Russia, France and our own country, compared with the different attitude she maintained against all offending powers in the age of the elder Pitt and the younger Pitt.

It is insisted, however, that encouragement yielded to the industry of one class of citizens, is partial and injurious to that of others. This cannot be in any just sense true, since the prosperity and vigor of each class depend in a great degree on the prosperity and vigor of all the industrial classes. But all experience shows, that if government do not favor domestic enterprise, its negative policy will benefit some foreign monopoly, which of all class-legislation is most injurious and least excusable.

Once more, it is said that the present system must be right, because predictions of disasters that should result from it have been falsified. I do not dwell on the signs, which seem now to portend a fearful fulfilment, nevertheless, of those predictions. Let it suffice to say, that it is as common an error to look prematurely for the blights which must follow erroneous culture as it is to expect precocious fruits from that which is judicious. This nation is youthful and vigorous. It cannot now suffer long and deeply from any cause, for it has great recuperative energies. It is not destined to an immediate fall, or even to early decline. It is the part of wisdom, nevertheless, not to try how much of erroneous administration it can bear, but to adapt our policy always so as to favor the most complete and lasting success of the Republic.

Gentlemen of the Institute: I refrain from discussing the details of policy. Circumstances are hastening a necessity for an examination of them in another place, where action follows debate, and is effective. I shall not be absent nor idle there. But I will not attempt to delude either myself or you into the belief that the opinions I have expressed, which, I trust, in some degree correspond with your own, will soon become fully engrafted into the policy of the government. I shall perform my duty better by showing you that it is not wise to expect, not even absolutely necessary to depend on, the exercise of a just patronage of our industry by the government.

This Republic, although constituting one nation, partakes of the form of a confederation of many States, and for the purpose of securing acquiescence allows great power to minorities. Although there is no real antagonism of interests, there is, nevertheless, a wide divergence of opinion concerning those interests, resulting from the different degrees of maturity and development reached in the several States. Massachusetts and Virginia, New York and South Carolina, scarcely differ in their ages; but, nevertheless, they differ in their industrial system as widely as Pennsylvania and Arkansas. The old free States have passed through the stages at which the merely agricultural and planting States have only arrived. It would practically be as impossible to bring these latter States immediately up to our proper policy, as it would be to carry us backward to the system which they are pursuing. They will resist all such efforts earnestly and perseveringly, so long as they shall feel that they are unable, like us, to distribute their industry, and so to share in the benefits of that policy. All that we can expect, under such circumstances, from the government, is some occasional and partial modification of its financial policy, so as to favor the success of the efforts of the friends of home industry in establishing it on a safe basis, without the immediate and direct aid of Congress. And this will be sufficient. It is not yet forty years since New-York applied in vain to the United States to construct the Erie canal, which was acknowledged to be the incipient measure in a system of internal improvements to be co-extensive with the republic. Now, not only that canal has been built, but the whole system is in a train

of accomplishment, although Congress has not only never adopted but has almost constantly repudiated it. Private and corporate enterprise, sustained by the States, has worked out what the Federal Government has refused to undertake. The same agencies will establish the American system. Capital, labor, science, skill, are augmenting here. Power is daily becoming cheaper, and consumption more extensive. New-Hampshire, Massachusetts, Rhode Island, Connecticut, Vermont, New-York, Pennsylvania, New-Jersey, Delaware, Maryland and Ohio, have become manufacturing States. The advantages resulting from the policy are indicated, not more by the universal improvement of the agricultural districts in these States, than by the prosperity and growth of their towns and cities. Here are Boston, Lowell, Lawrence, Springfield, Providence, New-Haven, Rutland, Bennington, New-York, Albany, Troy, Rochester and Buffalo, Philadelphia and Pittsburgh, Newark and Patterson, Wilmington and Baltimore, Cincinnati and Cleveland; contrast with them the towns and cities of those States which practically adhere to the policy of employing foreign industry, and you see plainly the results of error. That contrast excites inquiry, and inquiry will go on, until it shall correct the great error, and introduce universal emulation.

Persevere, then, gentlemen of the Institute, for while you are represented as hindering the prosperity of the country, you, and none so much as you, are securing it and rendering it universal. While you are regarded as favoring privileges and monopolies, you, and none so much as you, are counteracting pauperism and class legislation. While you are censured for opposing the interests of commerce, you, and none so much as you, are laying sure foundations for a commerce that shall be broad as the limits of the earth, and lasting as the necessities and the enterprise of mankind. While you are represented as checking the rising greatness of the nation, you, and only you, by lifting Labor to its rightful rank, are elevating the republic to true and lasting independence.

PROCEEDINGS OF THE FARMERS' CLUB,

ORGANIZED, JUNE 22, 1843.

The Farmers' Club of the American Institute, under the direction and control of the Committee of Agriculture.

The meetings are held on the first and third Tuesdays of each month, at 12 o'clock, M., except the months of March, April and May, when they are held weekly, at the rooms of the Institute, No. 351, Broadway.

The meetings are free to members of the Institute, and all other persons connected with the pursuit of agriculture, or who may desire through its medium to diffuse information on the subject of cultivation.

The club will be happy to receive written communications at its meetings, on the subjects of agriculture, horticulture, the raising and improvements of stock, and chemistry applied to Agriculture.

Translations from foreign journals and other works are always acceptable, and will be published in the Transactions of the Institute.

[Omitted in our last volume.]

Tuesday, Dec. 7, 1852.

Present.—Rev. Mr. Fitch, Dr. Underhill, Prof. Mapes, Mr. Shelton, Mr. Holmes, and others.

President Tallmadge in the chair.

Henry Meigs, Secretary.

The president announced the subjects of discussion:—New plants, new uses of old plants, and American madder.

Mr. Shelton, of California, exhibited bulbs of the soap plant, called amole. He washed his hands with it in the club-room. He said, it was very abundant in California, and was found also in Mexico and in Texas. It grows where snows lies upon it, and and in various places, dry or moist. It is so hardy, that it will lie on dry ground a year, without losing its vitality. It grows largest in moist lands, alluvial soils, and near San Francisco flourishes in very sandy land. I have never seen it cultivated by any one. It is rather a nuisance in the field, by causing the ploughing to be difficult, on account of the strong coarse fibres, which grow up from the bulb along with the stem and branches. Its color is light yellow, and the bulb is oblong and pear-shaped, and commonly as large as a hen's egg. It bears seeds upon its branches, having no leaves on them. The amole is constantly used by the Mexicans to wash their cloaks or wrappers. These, being beautifully dyed with bright colors, are found to be faded, if washed with common soap; but, with the amole washing, they retain all their brilliancy for a great many years. The amole stalk grows usually from four to six feet high. Its flowers are white and delicate. Mr. Shelton exhibited a drawing of the plant.

Rev. Mr. Fitch—It is a liliaceous plant—has many branches, but no leaves.

Mr. Shelton.—The stalk and branches die annually; the fibre, before mentioned, is very durable as well as strong. I remarked at a spring, that a quantity of them, left there by the washers, was perfectly sound and tough. It resembled very coarse horse hair. It does not seem to decay, even in such a position as that.

Rev. Mr. Fitch.—The amole bulb is much like the squill. Its seeds resemble those of the onion. Those who have eaten it were made sick.—The hands are inflamed sometimes by free use of it in washing.

Mr. Shelton.—I used it, as others do in California, to cleanse sores.

Rev. Mr. Fitch.—In that respect the amole is an excellent cleanser.

Prof. Mapes—If Mr. Shelton will let me have some of the bulbs, I will analyze them, and report the results.

Mr. Shelton—With pleasure—as many as you want.

Prof. Mapes—Many mucilaginous plants answer like purposes. They are emollient. The celebrated honey soap, which gained a premium at the World's Fair, was of this class, as well as many others. Molasses is often used to cleanse hands, and found to act with the advantage of common soap. The potato is also a cleanser, &c.

Mr. Shelton—In Mexico the pounded wood of the tree wyacan, which is something like lignum vitæ, is used to wash the rich bright colored serapas or cloaks; and the brilliancy of the color is retained even to the end of their duration, which, it is said, sometimes reaches forty years. Only one of those bright colors changes somewhat, and that is the yellow.

Prof. Mapes—When alkalies are used in washing, all the vegetable colors are subject to change.

Mr. Shelton—The Indians of Mexico will not wash their serapas with common soap, because it fades the colors. California has a great many varieties of bulbous plants, among which is a very beautiful flower, the calochortis, growing in abundance in both the warm and cold districts.

Rev. Mr. Fitch—There are three varieties of it there, all of them beautiful. There are, besides, many lovely flowers growing there.

Mr. Shelton—The brodiœa, a bulb, yields various colored flowers, growing in corymbus, (flowers on many foot-stalks, spread like umbrella sticks.) The Indians eat these bulbs raw or roasted; the bulbs taste something like potatoes. Here is a drawing of one of the Alliums; it grows like our wild onion, but presents a handsome bunch of pink-colored flowers on the summit of its stem. One valley there is called Onion Valley, from the quantity of this plant it contains. Some of these onions weigh about half an ounce. There is a colored drawing of the Coles-

temma purpurea, a bulb, bearing purple flowers. Here is a drawing of the much-named medicinal plant called Canchalagua.

Prof. Mapes—Our people take great quantities of it, to cure, as they say, chills and fevers, by the title of *challyzog!* Is not the great size to which many vegetables attain in California owing to the long season, and growing in soil washed down from the hills?

Mr. Shelton—No, sir; it is owing to peculiar soil and circumstances. They generally attain their growth in three or four months. During the rainy season they have light showers of rain, during which the ploughing and other cultivation go on. The country is covered, for hundreds of miles in places, with wild oats. During the dry season, no dew falls except near the sea cost. Never a thunder storm.

Rev. Mr. Fitch—I have slept in the open air hundreds of nights; there was no moisture at all.

Prof. Mapes—The frequent light showers carrying pabulum to the plants, greatly increase the growth of vegetables, especially when the soil is free, so that the water does not stand about the roots; so in well under-drained land, this advantage of free percolation is obtained, as well as its passing off, leaving the roots in the best condition.

Mr. Shelton—The land on which we raise a heavy crop of onions the first year, yields after cropping for three years in succession, will hardly yield any onions the following year. The cabbage heads frequently attain fifty pounds weight.

Prof. Mapes—Onions will grow in the same field an hundred years; they give no excretia.

Mr. Shelton—I will guarantee to have here next year a beet weighing one hundred pounds. The large seeds exhibited at this table last year grew on Commodore Stockton's land, which is among the most fertile in California. He owns, I believe, about three thousand acres of it. Where the beet grew the land was ploughed only six inches deep; the sub-soil is heavy and black.

The beets grew out of ground about two feet, and their roots are but a few inches in the soil. Those sent here were respectively of the weight of 47 pounds, and 63 pounds. If that land where they grew had been properly cultivated, these beets would have attained a hundred weight each. That land requires ditching rather than irrigation. Grand rows of Sycamore and Cottonwood trees grow on that plantation.

Mr. Holmes—Are there are any Elms there?

Mr. Shelton—I don't recollect.

Rev. Mr. Fitch—There are no elms or sugar maples in California. There is one of the maples, handsomer than the Norway maple.

Mr. Shelton—Seeds are planted repeatedly; generally in February and March. There is a sweet sugar pine tree, from which Indians gather a very relishing sugar.

President Tallmadge—Have you frost in those fertile vallies?

Mr. Shelton—Occasionally, in the valley of San Jose and others. The climate of California is very variable, according to location and circumstances; it varies from the torrid to the frigid. Generally, the orange flourishes; and at San Francisco the tomato flourishes all winter.

Rev. Mr. Fitch—There is no walnut nor chestnut. Fine raspberries and gooseberries are plentiful and very fine, and several varieties.

Mr. Shelton—I have seen gooseberries from the mountains almost as large as those of England.

Rev. Mr. Fitch—The wild strawberry there is better than any we have here; it is often one inch in diameter; and of the blackberries, both high and low vines, larger and very superior to those here. They have what they called the Salmon berry, of a dark red color, very rich fruit, growing near a river. The berries often drop in, and are eagerly eaten by the salmon.

Mr. Shelton—I have found it necessary to crowd them through (one by one) the mouth of a bottle one inch in diameter. They have no thorns, and grow like our thimbleberry.

Rev. Mr. Fitch—They have a wild cherry, the Prunus Virginiana, growing (the cherries) in clusters, of a carnelian color, transparent, heart-shaped, very prolific, of the size of our mazzard cherry. They have another Prunus, an ornamental tree, evergreen; it is like the holly. It is the Prunus salsifolia, fruit of no value. The Alder (sambucus) grows in some places there 50 feet high; bears white flowers like the snowball; the fruit makes a delicious wine.

Mr. Shelton—I have seen this alder in Mexico, and so large that many cattle rested under its shade. It is also large near New-Orleans.

Rev. Mr. Fitch—I have seen an old alder, when badly wounded, cast off its old body and make a new one.

Dr. Underhill, of Croton Point—I am greatly pleased to find some gentlemen attaching themselves so strongly, so usefully, to the agriculture of California, while so many more look only for gold. As to the grapes of that region, I am reported as comparing my grapes with theirs, and claiming superiority for mine. It is an error. I did not play the egotist so much. I would not be guilty of it, on any account. The magnificent vegetation attracts our strong regards, and we earnestly desire exact information relative to it. We would look for that as the Spaniards look for gold. America furnished the precious metals for Europe; now let us export our glorious vegetable productions. Let us have our horticulture and agriculture tried fully; let us try what can be done. We hope the gentlemen from California, who have given us so much and highly interesting information, will be encouraged to persevere; and may they reap full reward for what they have done, and may do, in this great cause; and may they succeed in giving to the vegetable wealth an impetus equal to that of the search after gold.

President Tallmadge—We have taken pains, for several years past, to ascertain what grapes of good qualities, worthy of our culture, would be obtained either in North or South America, supposing that being habituated to the climate of either continent, they might become inhabitants of the United States of the east. We found, on enquiry, that the wild grapes of either continent were all of little or no worth, except, I believe, the Isabella and Catawba. And it appears to be established that all the good grapes of the Pacific coast were derived from those brought out from Spain, by missionaries, long ago.

Rev. Mr. Fitch—I looked for wild native grapes, but found none worth cultivation.

Dr. Underhill—Please to describe such as appear in your markets in California.

Rev. Mr. Fitch—I think they are of the Chasselas; they have a tinge of purple, clear.

Mr. Shelton—A color between those of Isabella and Catawba.

Rev. Mr. Fitch—There is a cactus whose fruit is very delicious, as rich as a Virgalieu pear, color of a yellowish green, taste very cool. It is the Spinosa alba. It appears upon the coat of arms of Mexico, because on one occasion the Mexican army was repulsed by the Spaniards, and being out of provisions, lived for a time upon this delicious fruit. This noble plant thrives at San Francisco, and is magnificent at Santa Clara.

Mr. Shelton—I have seen it fifteen feet high, and a foot and a half in diameter. It forms fine hedges.

Dr. Underhill—Our enterprising fellow-citizen, Dr. Perine, introduced that strawberry pear into Florida. It is the highest flavored fruit in the world.

Mr. Shelton—The Mexicans call it Pitaya. They cost $6\frac{1}{4}$ cents a piece in the market. The quince grows very large in California.

Judge Van Wyck—It appears that most of the best fruits in California are the descendants of European origin, carried by the

missionaries to the new world at the same time that their errand was to carry the light of Christianity to the benighted Indian.

I am requested by an active member of this club to move for an application by the club to Commodore Perry, to allow it to become one of the distributors of seeds and plants which he may bring from Japan and elsewhere.

Rev. Mr. Carter seconded the motion.

Prof. Mapes objected to it unless pecuniary provision be first made. He objected to the asking our officers to expend money for us.

Judge Van Wyck—It is well understood that those expenses are paid by our government, which has given instructions to the officers to procure useful and valuable seeds and plants from all the countries on earth. Motion carried.

Mr. Fleet moved that the Secretary write to Commodore Perry on the subject.

Mr. Shelton wished to correct an error in the last report. He did not say that the clusters of grapes in Gen. Vallejo's vineyard lay on the ground. That is not the case. The vines are very short, but also very stout, and bear their clusters with infinite ease clear of the ground.

On motion, it was ordered that the subject of New Plants, new uses of Old Plants, and American Madder, be continued at the next meeting of the club.

Adjourned to Dec. 21st, at noon.

HENRY MEIGS, *Secretary.*

Tuesday, March 8, 1853.

Present—Messrs. R. S. Livington, Prof. Mapes, Dr. Antisell, Gen. Chandler, Mr. Bartlett, late of the Albion, and his son; Solon Robinson, Judge Van Wyck, Youmans, Butler, Dickey, Judge Scoville, Armstrong, Rockwell, Scott, Lee, Lawton, Dr. Church, Schenck, of Jersey; Amos Gore and others, between thirty and forty members.

Hon. Robert Swift Livingston in the Chair. Henry Meigs, Secretary.

The Secretary read the following papers, prepared by him. He thought the following remarks from the London Farmers' Magazine of February last, were exceedingly just:

[London Farmers' Magazine, February, 1853. Extracts.]

The prosperity of the agricultural interest is an object which must ever deeply engage the attention and feelings of the British journalists. It is with great pleasure that we have lately observed the increase of Farmers' Clubs in different parts of the country. Hitherto education, both with regard to persons destined to be farmers, and those intended for other callings, has been too vague and general, and hap-hazard, if we may so speak. Reading, writing, arithmetic, geography, history, &c., convey not the particular knowledge bearing on the after pursuits of life. Education for a trade or profession has to begin when school education is over. The youth who is to be a farmer has everything to learn by experience. He has no accumulated stores of the past to draw upon, but can only say at last, with the man in the story, "I am old, sir, I am old; that's why I know a thing or two." But this is a very costly way of acquiring knowledge, and has often to be obtained at the expense of many failures. Hence the necessity for a Farmers' Club, or Institute, in every village; a sort of joint stock bank of experience, in which every agriculturist should have a lot and share. Such clubs do already exist here and there, although we look upon them as yet only in the egg, but much good may be eventually hatched out of them.

At present, in too many instances, our Farmers' Clubs are in danger of degenerating into mere boisterous and convivial meet-

ings, held at distant intervals, and at which political toasts are given, landlord's healths proposed, and speeches full of flummery and flattery on the one hand, of "sound and fury" on the other, are made *usque ad nauseam.*

The practical man and the man of science should be brought together, to compare notes and report progress. The walker in the old ways and the dashing lover of new paths might exhibit their results, one against the other. And thus endless good might be achieved by the contributions of so many minds to one common stock of knowledge. Steam threshing and reaping machines were fables even in our own time. Who knows what the collision of intellect, like that of flint and steel, may yet accomplish?

The Farmers' Clubs of Scotland have advanced rapidly, and have outstripped their brethren south of the borders.

WHAT SCIENCE MAY DO FOR AGRICULTURE.

(Extract.)

Practical farmers have been in the habit of applying opposite qualities of soil to fields, with a view of improving them, as clay to light soil, and sand to clay and bog earth. This method of improving the quantity and quality of grain has invariably been successful. Now the question is, how has this method acted advantageously? The principal cause has been a chemical action. It is true that a good coat of clay on sandy soil will make it more retentive of water, and a good covering of sand on clay will make it more porous, and therefore cause the air to circulate through it more freely, increasing oxidation and absorption of carbon. But it is the chemical action of the opposite quality of soil that causes the improvement of quality; therefore we must inquire of what this chemical action consists. The chemical term for the oxide of clay is alumina, the base of which is aluminum; and the peculiar influence that the oxide of this (alumina) has on vegetation is, it makes it tough and more insoluble than that grown on mixed or sandy soil. Some popular professors of agricultural chemistry state in their works that it cannot be detected that alumina exists in, or forms any part of any kind of vegetation, but there are numerous open proofs that it has an important in-

fluence on nearly all kinds of vegetation. Timber and straw are, and grain itself is, tougher when grown on this soil, although the analytic chemist cannot discover it. Sand, or silica, as it is technically called, acts chemically in some way; it is dissolved, suspended in water, and sucked up by plants.

[Journal D'Agriculture, Lower Canada, February, 1853. Extracts, Translated by H. Meigs.]

INSECTS.

Method of Destroying Insects in Grain, Peas, Beans, &c.

Wash them in cold water immediately after they are gathered, and then dry them perfectly in the sun. All the insects found inside of them will come out and go away; all those not perfected will not, after washing, come to perfection.

Query—Does the washing drown them?

[Revue Scientific, Paris. By A. Sharling. Translated by H. Meigs.]

ON THE BUTTER FERMENTATION OF POTATOES.

A baker of the town of Boras, in Sweden, had observed, that the bran of humid (watery) potatoes, kept at a temperature of from 30 to 35 deg. centrigrade, or about 85 or 95 deg. Fahrenheit, in two or three days, underwent a peculiar fermentation. We understand by potato bran, the matter left on the cloths, after the grated potatoes have been squeezed through it. This bran is always employed in making biscuit. Mr. Sharling being called to examine this fermentation, discovered that it was accompanied by the disengagement of carbonic acid, then the formation of butyrique acid. As Sharling was then not acquainted with the work of Pelouze, on the butyrique acid, formed in the fermentation of sugar, he regarded the matter as an accidental phenomenon; but he soon had occasion to convince himself, that it was constantly produced in the fermentation of potato bran. In order to get this acid separate, or isolated, he poured some drops of a solution of carbonate of soda on the bran, before the fermentation began. Sixty hours afterwards, a portion of the fermentating mass was treated with dilute sulphuric acid, when immediately a strong odor of butyric acid was manifested; the whole mass was then mixed with cold water, then filtrated, and the filtrated liquor was evaporated to dryness. The butyrate of soda, mixed with a little

acetate, was dissolved in alcohol. A portion of this solution was evaporated to dryness, and the saline residue was subjected to distilation, with dilute sulphuric acid. There passed by the distilation an aqueous solution of butyric acid, so concentrated, that some drops of the acid swam on the surface of the liquor. If the distillation is too prolonged, there passes also acetic acid. The other portion of the alcoholic solution was directly submitted to distilation with sulphuric acid, and a liquid was obtained, which had an odor similar to that of rum.

Rhubarb contains a resin, tannic, gallic, acid sugar, wax, fat, starch, pecting, the gelatinizing principle, abundant in carrots, potash, soda, silex, phosphate of lime, of magnesia and oxide of iron, no oxide of copper, as Buchner supposed.

[Highland and Agricultural Society of Scotland, January, 1853. By Hugh Rainbird.]

ON HYBRIDIZATION OF WHEAT.

"New varieties of our cultivated plants, generally owe their introduction to accident rather than to a systematic plan, continued through a long series of years.

A farmer is struck by the appearance of a few ears of corn, (wheat or rye) either growing in the corn field, or, what is more generally the case, in some place where the soil and circumstances are favorable to a luxuriant growth. He preserves the seed, and in a year or two, introduces it as a new and improved variety; or he may select a large and well shaped root from his turnip field, and rear a stock of seed from it. This method gives us improved plants, but not new ones.

I shall now allude to the effects of hybridization upon wheat, by which I have succeeded in obtaining several varieties, far more distinct in their manner of growth than could possibly have been obtained from mere selection or cultivation. This hybrid is the result of the impregnation of the stigmas of the 'Piper's Thickset' with the pollen obtained from the anthers of the Hopetown wheat. I date the commencement of my experiment, from the autumn of 1845. In 1848 the quality was much improved."

FOOD FOR STOCK—COOKED AND RAW.

The shaking quakers of Lebanon, N. Y., say, that the experience of more than thirty years has proved, that, for fatting pork, ground corn is worth one-third more than raw unground. We have ground all our provender over a quarter of a century past. And the same experience has taught us, that three bushels of our cooked meal is equal to four of the raw for stock, especially swine. For nearly thirty years we have raised from forty to fifty thousand pounds weight of pork, exclusive of the offal fat and lard by such feed.

We use for cooking it, six or seven potash kettles.

FERTILITY OF THE MUD OF THE RIVER NILE.

The celebrated microscopic philosopher Ehrenberg, has examined this mud, and finds its great fertility to be owing, not to any peculiar mineral contribution, or to the presence of vegetable matter, but to the vast accumulation of an extremely minute form of microscopic animals, which by their decomposition enrich the soil.

Prof. Mapes was requested by the chairman to speak on the subject of the day—' Difference of cold frame, and hot bed plants.' Said, that his experience had learned him, that a very great superiority is found in the cold frame over the hot bed for cabbage plants. He sows the seeds in last of August or in September, and before frost sets in, he pricks them into his cold frames, quite near each other, say about two inches; the frame is made of common boards, with a top formed by cutting grooved boards in two, driving the tongues and grooves together, then put battens on each end. These pieces are laid on the frame, battened side down, so that rain runs clear off. In the winter he occasionally lifts these covers to let in air and light, but for the most part leaves them on during all the hard frosts. The plants in the frames are, of course, frozen hard, but when spring arrives, they start strong and become very early, vigorous plants, so that his neighbors come to him for them, and pay a price, many times greater than for hot bed plants. The soil in the frames is, of course, good, but he adds nothing more than to the rest of his soil. Cobbett used to sow

his cabbage seed in the fall, but he did not much benefit in it. The quiet protected plant in the cold frame, I find best; but, if the season should be such as to freeze and thaw several times, they suffer.

Question by a member.—Do you ever cover your cold beds, with mats, straw, or any thing?

Prof. Mapes—I put nothing, whatever, over my board covers.

Mr. Gore said, that he liked Hare's marrowfat pea, and had, after the first crop, planted again, about the 15th of August, and had a second one.

Mr. Scott exhibited tomatoes, which would have ripened in a few days more, raised at New Brighton, Staten Island, in the conservatory of J. C. Green, Esq., by his gardener, William Chorlton. They seemed to be nearly as vigorous as summer growth. He also exhibited in a pot, a Japan pea plant, about six inches high, with a pair of first leaves, an inch and a half in diameter, and resembling a cotton plant far more than any pea or bean. This pea has grown in about three weeks—no member of the club has ever seen it before. Mr. Scott also presented full blown pinks, from Mr. Chorlton. He read the following extract from *The Agricultor.*

FORCING THE TOMATO.

Among the catalogue of vegetables that may be had during winter, allow me to call your attention to that desirable edible, the Tomato. This esculent may be furnished fresh the whole year round, if desired; and it appears feasible that it might be made to pay by the market gardener, as no doubt a good price would be realized during the time they are not to be had out of doors. So far as I have proved, from the experience of two years' successful cultivation of it under glass, there is no similar vegetable more easy to manage. If the following remarks are of use, they are at your service.

In the first place, solar influence is a main requisite. Without this, the plants do not elaborate the sap, so as to produce blossoms sufficiently strong to set the fruit; consequently, a free ex-

posure to the sun's rays is absolutely required. A low, close and light pit is perhaps the best structure that can be had, which might be applied to many other useful purposes, as propagating, growing flowers, &c. A close vinery, not at work at the season when wanted for this purpose, would answer quite as well; and as the tomato would not require a greater temperature during the night than 55 degrees, there would be no obstacle to accommodating the grape vines during their bursting, after which the tomatoes could be removed, if found to be troublesome. On the side of a bank, facing the south, a cheap and efficient substitute might be formed by leveling down, so as to give a flat base, with common garden frame lights, reared close together, and supported by rough spars, fixed sloping from the upper to the lower base, and a common flue conducted through from end to end. This kind might answer the purpose of the market gardener, or persons of limited means, and I am convinced that, under such circumstances, it would pay for fuel, attention, &c., and leave a profit; for, as far as I have proved, the tomato will fruit freely under glass, if fully exposed to the sun.

The following is the practice adopted at this place:—The seed is sown about the beginning of August, and when the plants are large enough, they are planted out singly, about three feet apart, in a bed of good, but not rich earth, two feet wide by one foot deep, and placed alongside the inside front of the house, the upper surface being about eighteen inches from the glass, and a drainage of rough stones laid underneath the whole. The sashes are left off until cold nights begin to occur. As the plants progress in growth, the weakest branches are thinned out, the best tied up under the roof, and about eight inches from it, in a similar manner but not with the same regularity as usual with the grape vine. There are, from time to time, more branches produced than are necessary, which would cause too much shade. The weakest should be removed occasionally, and likewise any decaying foliage. As the blossoms continue to expand, a little assistance is useful in helping impregnation, which may be done by giving a sudden but light jerk to the branches; this will burst the anthers, and liberate the fertilizing pollen. At all favorable

opportunities, admit air from above, but avoid cold currents, which produce the growth of a black fungus, that, if not checked, will as speedily cover the leaves as the mildew does those of the grape vine. If such should make an attack, a little more fire heat, with a small portion of sulphur sprinkled on the coolest end of the flue, where it will not ignite, will soon put the pest to rout. Fifty-five degrees is a suitable temperature through the night, and with sunlight from seventy-five to eighty six degrees, always remembering to admit air when favorable, but avoid biting winds. The bed will occasionally require a supply of water, and the atmosphere should be kept somewhat damp, but by no means saturated. Syringing over head has a tendency to accelerate the growth of the mildew, and ought not to be done unless in continued dry and sunny weather, which does not often occur in the winter time. I have never yet been troubled with insects in forcing on this plan ; but if red spiders should make their appearance, the sulphur applied as above will stop it. Fumigating with tobacco well, has destroyed the aphis, or green fly, and an occasional syringing with a weak solution of whale oil soap, will dispute the interference of any other kinds, which, by the way, there is no occasion for, until the enemy makes its appearance. The above treatment has so far succeeded with me, and no doubt will do so with others, if tried. No plant requires less skill in forcing, and none will give greater satisfaction where fresh and delicate vegetables during the winter are valued.

WM. CHORLTON,
Gardener to J. C. Green, Esq.,
New Brighton, Staten Island.

Prof. Mapes said that he cuts off the stems above good bunches of tomatoes, and thus invigorates them. No sort of harm in so doing, no bleeding, but finer and earlier maturing by eight days. All the best tomatoes are found to grow within about eighteen inches of the ground, at least ninety per cent cf them. I take deep pots to grow the plants in, and set the pots in deep hot beds, and I have far better plants, and they come two or three days earlier.

Mr. Gore—I have tried a sort of pot made with four tapering boards bound together at the top, which is the broad end, setting these in the ground. When the plants in them are fit to set out, I lift out the pot, and by loosening the top board I have the whole of the roots easily left in the hole without being disturbed. I have thought of getting cast iron pots.

Prof. Mapes—All your plans are mistakes, for all gardeners know, that a proper pot must be of porous clay, just burned enough to give it strength; no glazing, and with its absorbing properties complete. Such pots too are best when old, for they absorb abundantly ammonia, and give it out to plants. I would not give one of my old pots for three new ones.

Solon Robinson—Then you are not afraid of having broken bricks on your lands? There is nothing better than they are for grape vines.

Prof. Mapes—The pots I have spoken of, receive the essentials for the plants—they hold on to potash, soda and ammonia, until plants take it out of them.

Mr. Gore—I have found benefit in pruning my tomato vines.

Prof Mapes—Some very fair looking tomatoes are too hollow, for they answer better for stuffing, as is fashionable in our hotels, but I prefer the large solid one of the irregular figure.

Mr. Scott—Mr. Chorlton chooses fair and smooth ones.

Mr. Gore—I have raised pear shaped ones, solid light red color, with a small yellow spot on top; they make good pickles.

The secretary agreed with professor Mapes, as to the quality of the solid, irregular formed, large tomato. Some of the best he had ever known, were more than a pound in weight; raised in the gardens of the Parkers, of Perth Amboy. The secretary has raised tomatoes ever since 1795, when he first heard of it, from on old physician of the West Indies, of whom, and the tomato he has made mention heretofore; especially of the Doctor's doctrine, that tomatoes had no acetous action on the human system, but,

like calomel (without its evils) was an admirable purifier of the liver. Cut tomato with polished steel, and no acid action is seen on the knife.

Prof. Mapes—To salt again. I have tried six bushels of salt on an acre, and all the wire worms and grubs disappeared. Sanford Howard lampooned me about this.—Mr. Aaron Kellogg, of Oswego, is present, and I ask him about his experiment.

Mr. Kellogg repeated, that he had applied five bushels on an acre, infested with wire worms, and they disappeared. This wire worm is about the size of a common knitting needle and tough, and about an inch long, of a light or whitish color. My field salted, was free, while my neighbors suffered loss.

Prof. Mapes—Other persons besides Mr. Kellogg and myself, have tried the same experiment with success.

The secretary remarked, that some definite character of wireworm enemy is wanting, and thought that it is found in the excellent work of the learned Dr. Harris, of Harvard, Boston; published in Boston, in 1852, viz: 'Insects, injurious to vegetation,' 1 vol., octavo.

'The elateridæ, or spring beetles, well known by the faculty they have of throwing themselves upwards with a jerk, when laid on their backs.

The larvæ, or grubs of these elaters, live upon wood and roots, and are very often injurious to vegetation. In England they are called wireworms, from their slenderness and uncommon hardness. They are not to be confounded with the American wireworm, a species of iulus, which is not the true insect, but belongs to the class myriapoda, (commonly called centipedes, 100 feet, and not 1000 feet,) whereas the English wireworm has but six feet. The European wireworm is said to live in its feeding or larvæ state, not less than five years; during the greater part of which time it is supported by devouring the roots of wheat, rye, oats and grass, annually causing a large diminution of the produce, and sometimes destroying whole crops. It is said to be particularly injurious to gardens, recently converted from pasture

lands. The European farmers and gardeners resort to the ingenious method of strewing slices of potatoes or turnips through the rows; and women and boys are employed to collect the worms, which readily come out to feed on this bait."

Numerous complaints have been made of the ravages of cutworms among corn, wheat, grass and other vegetables, in various parts of the country. After a tiresome search through many of our agricultural publications, I have become convinced, that these insects and their history are not yet known to some of the very persons, who are said to have suffered from their depredations. Various cutworms, or more properly subterranean caterpillars, wireworm or iuli, and grub worms, or the young of May-beetles, are often confounded together or mistaken for each other; sometimes their names are interchanged, and sometimes the same name is given to each and all these different animals. Hence the remedies that are successful in some instances, are entirely useless in others. The name of cutworm seems originally to have been given to certain caterpillars, that live in the ground about the roots of plants, but come up in the night and cut off and devour the tender stems and lower leaves of young cabbage, beans, corn, and other herbaceous plants. These subterranean caterpillars are finally transformed to moths, belonging to a group which may be called agrotideans (agrotidinæ), from a word signifying rustic, or belonging to the fields. Some of these rustic moths fly by day, and may be found in the fields, especially in the autumn, sucking the honey of flowers; others are on the wing only at night, and during the day lie concealed in chinks of walls and other dark places. Most of these moths come forth in July and August, and soon afterwards lay their eggs in the ground, in ploughed fields, gardens and meadows. In Europe it is found that the eggs are hatched early in the autumn, at which time the little subterranean caterpillars live chiefly on the roots and tender sprouts of herbaceous plants. On the approach of winter they descend deeper in the ground, and curling themselves up, remain in a torpid state, till the following spring.

Remedy.

Fall ploughing of sward lands, which are intended to be sown with wheat or planted with corn, the following year will turn up and expose the insects to the inclemency of winter, whereby many of them will be killed, and will also bring them within reach of insect-eating birds. The only effectual remedy, at present known, has been humorously described by Mr. Asahel Foote, in the Albany Cultivator, and reprinted in the New England Farmer. After having lost more than a tenth of his corn, he "ordered his men to prepare for war—to sharpen their finger ends, and set at once about exhuming the marauders. For several days it seemed as if a whole procession came to each one's funeral, but at length victory wreathed the brow of perseverance; and the precaution having been taken to replace each foe dislodged, with a suitable quantity of good seed corn, he soon had the pleasure to see his field restored in a good measure, to its original order and beauty."

Mr. Deane states, that he once prevented the depredations of cut worms in his garden, by manuring the soil with sea mud. The plants there generally escaped, while every one was cut off in a spot of ground contiguous. [Was it the salt that did this?—Meigs.] Mr. Peterson, of Stockport, Pennsylvania, protected his cabbage plants from cutworms, by wrapping a walnut or hickory leaf around the stem, between the roots and leaves, before planting it in the ground. The late Hon. Oliver Fiske, of Worcester, Mass., says, that "to search out the spoiler and kill him, is the very best course; but as his existence is not known, except by his ravages, I make a fortress for my cabbage plants with paper, winding it conically and firmly above the root, and securing it by a low embankment of earth."

In the summer of 1851, one of our agricultural newspapers contained an account of certain naked caterpillars, that came out of the ground in the night, and crawling up the trunks of fruit trees, devoured the leaves, and returned to conceal themselves in the ground before morning. (See the Mass. Ploughman, for June 28th, '51.) Roses, currant bushes and other shrubs, and even young trees, often lose their tender shoots, by having them cut off and devoured during the night. This is the work of a naked

caterpillar, which generally grows to a larger size than the common cutworm, and, like the latter, may be found by digging at the root of the plant. In June, one of these measured in length, an inch and a half. His body livid or brownish, and shining above, with a chestnut colored head, and a horny spot of the same color on the first and last rings. A few minute dots, producing very short inconspicuous hairs, were regularly disposed upon his body. This caterpillar changed to a chrysalis in the ground, and was transformed to a moth on the first of July. The moth very often enters houses in the evening, during the months of July and August, and in its restrained flight, keeps bobbing against the ceiling and walls. When it alights it sits with its wings sloping in the form of a steep roof. It is easily distinguished by its Spanish brown upper wings, marked with a large kidney spot, and a broad wavy blue gray band, near the end Its eyes, when living, shine like coals of fire. The wings of this moth expand an inch and three quarters, or more, and are proportionally broader than those of the cutworm moth.

The learned Dr. Harris, of Harvard College, Boston, in his volume of 1852, on insects injurious to vegetation, says, that "The army worm, or cotton worm, which ravages the cotton fields of the southern States, has sixteen legs, but the foremost prop legs are shorter than the rest, and the caterpillars crook their backs in creeping, which has caused them to be mistaken for geometers by some writers. The cotton worm is green, doubly striped with black on the back, and sprinkled with black dots; it grows to the length of an inch and a half, transforms in a kind of web or imperfect cocoon, and becomes an olive-brown moth, called *noctuaxilina* by Mr. Say. It is found only as far as the cotton plant is cultivated, and never occurs in New-England."

Mr Solon Robinson spoke of the army worm and its wonderful numbers, and their ravages. I have seen the armies in motion, and it is an extremely exciting and most wonderful scene, extending sometimes many miles. The feet of horses and wheels of carriages are constantly wet with their crushed bodies; the horse finds no spot for his foot free from them. The planters try to arrest the march by ploughing deep furrows on the side threatened

with invasion; on comes the mighty host, fills every furrow, and the army pursues its resistless march. Some farmers, when the furrows are full, drag logs through them to destroy the worms. I have driven my horse and wagon for five miles together through this army; every step crushed worms. As to number, some say they are millions; I would rather say they are a thousand cart loads in number. The worm is from one and a half to two inches in length, of a faint yellow, striped, with but little hair upon it; others of a reddish color, with light-colored rings on its body. They are timid; at your approach they fall down. They do not always (as some have imagined) pursue a regular course of march, but are found going towards various points of the compass. I have seen one field utterly cut up, and one contiguous not materially injured. They leave the straw clean and shining, removing every leaf, so that the wheat is hard to bind. I remarked that one army was in operation about three weeks, and then disappeared as suddenly as it came. On one occasion, I saved my wheat by means of an army of blackbirds, which came to my assistance in myriads, and eat up the worms.

Mr. Gore, of New-Jersey—I once visited an army of worms on Long Island, and there I saw the trenches dug to defend a farm, filled with the worms.

Mr. Robinson—No sickness follows the army worm immediately, but it certainly is always (in Indiana) expected.

Mr. Schenck, of New-Jersey—We had some on our farm last season. The road near us was full of them; the wagon wheels and horses' feet were wet with their mashed bodies. Some thought that they sprung from the grasshoppers, which had been very numerous, and because they found many wings, &c., of dead grasshoppers at the time of the appearance of the worms.

Mr. Kellogg, of Oswego, in reply to a question by Prof. Mapes, said that, as he stated here the other day, he had put five bushels of salt upon one acre, and that it killed almost every wire worm, where they had been very destructive, and still were, in an unsalted adjacent field. This wire worm is quite hard, has no feet as I could perceive, and is as large as a knitting needle.

Prof. Mapes—I have watched the operations of the melon grub all night. It comes up perpendicularly out of the ground, and eats all around the plant. I have had plants in boxes, and put salt all around the boxes, and the grubs thereabout are all killed by the salt.

Mr. Schenck—I find that the wire worm bores through my corn stalks.

Prof. Mapes contributed for distribution some dozen of papers of seeds from his experimental farm, the caulirapa especially. They were well received by the members; such is the justly high estimate of the value of seeds of the best plants, saved for *actual use*, instead of *for sale.*

The chairman requested members to bring some of their best products, and thus make a most profitable exchange of honest ones. A bad seed not only deprives the man who plants it of his money, and his hopes, and his labor, but it takes from him (so far) *one whole year of his short life.*

Prof. Mapes proposed as the subject for the next meeting, on Tuesday, March 22, at noon, The Sweet Potato and other Potatoes.

The club then adjourned.

H. MEIGS, *Secretary.*

TUESDAY, *March* 22, 1853.

Present—Hon. R. S. Livingston, Dr. Church, Prof. Mapes, Messrs. George Dickey, Van Wyck, Armstrong, Gore, Pike, Coleman, of Brooklyn, Kellogg, of Oswego, C. M. Denison, and Governeur M. Wilkins, of West Chester, Solon Robinson, Gen. Chandler, and forty others.

Hon. R. S. Livingston, in the chair. Henry Meigs, Secretary.

The chairman announced the subject—The Sweet potato and other potatoes.

Robert L. Pell, of Pelham, desired Prof. Mapes to speak of the mode in which continents and islands recover the means of fertility which have been swept from them by rivers into the oceans.

Prof. Mapes, with the warm approbation of the club, said, that if it was the wish of the members, and would not take too much time, he would proceed. He said that the fertile portions of the continents are ever being carried to the ocean; nor is this confined to the soluble portions of inorganic substances only, for soluble portions of the organic part of both vegetable and animal substances are carried from continents by our large rivers, and conducted to the sea, and if no means were provided for their return to the dry land, the earth would long since have been denuded of its fertile portions. The deltas of the Nile, of the Mississippi and of many other rivers, show conclusively the immense amount that is daily carried in mechanical suspension in their waters, the heavier portions of which alone subside to form these deltas. The woodland estate below New-Orleans, belonging to Mr. Johnson, of our city, was a few years since covered with water of sufficient depth to float the larger classes of vessels. In addition to these deposits, the under currents of these rivers are so imbued with these organic substances in mechanical suspension, as well as with the more soluble portions of the inorganic constituents of soil, that any substance falling into the rivers at or near New-Orleans with sufficient force to enter this current, will never again rise. And the quantity thus propelled into the ocean, is one 365th part of the decay of vegetation, over a surface of millions of acres, added to which are the falling banks of rivers, bars removed by change of channel, animal excretia, etc., etc.

That passing into the Gulf of Mexico is subject to gradual dilution, separating by difference in specific gravity and various modifications of decay, these ultimates forming food for fish of different kinds in different latitudes, and causing those fish localities so well known on the coast. The cod are fed on the banks of Newfoundland, while the shad fatten south and travel north to deposit their spawn, where the greater dilution of food is more appropriate for the use of their young. Large portions of these materials, washed from the continents, go to feed the Algœ, which,

unlike many of the land plants, feed all over their surfaces, the principal office of their roots being to detain them in one particular spot, while their specific gravity being less than the surrounding water, causes them to maintain their upright position. When ripe, the Algæ undergo decay, and either in their perfect or disorganized forms, furnish food for fishes, crustacea and sea animals. Many of the vegetable products of the ocean are used as food by the birds, while others, in obedience to nature's laws, assume the kind of organism we noted, thus forming food for men and birds. Many of these birds are themselves food for man, while others deposit their excretia on the Guano Islands, and eventually contribute by the decay of their bodies to increase the bulk of these manurial deposits. The large amount of Algæ and sea grasses washed on the eastern shores of continents, is another source for the restoration of the land of its constituents from the sea. The uprisings noted by geologists, have often presented us with immense deposits of shells; the green sand marls of New-Jersey, are filled with sharks' teeth and other oceanic remains.

The consumption of shell fish is a prolific source of restoration from the ocean. The large consumption of fish, the amount of procured in the whale fisheries, seal fisheries, &c., all tend to restore in large quantities these proximates, albumen and gelatine, large quantities of carbon, phosphates, and all other constituents, which once or oftener occupied the land in other forms. The burning of kelp, the making of muriatic acid and soda from sea water, and various other chemical manufactures, of which the products of the ocean form a part, are an active and immense means of restoration.

The removal of the guano islands to the continents are now returning the aggregations collected during a more sparse population of the earth, for the use of an increased and more busy throng.

The nitrogenous portion of all matters carried to the ocean, as it assumes a gaseous form for decomposition, enters nature's great store house, the atmosphere, and while being blown across the continents, this ammonia is brought down by rains and dews, and

is received and retained by the carbon and alumina of the soil, until nature in her economy shall again solidify and appropriate this *muscle-making* constituent.

It must not be supposed that the wash from the continents necessarily settles to the bottom of the ocean, for as each particle arrives at a depth where the pressure of the superincumbent water renders its specific gravity the same as that of the suspended molecule, it will there float until by chemical change it becomes specifically lighter, and rises to such point as enables it to avail of the sun's influence combined by absorption of gases with surface water, these yielding up its nitrogen, either in some proximate form as food for fish or combined with hydrogen as ammonia, in which state it enters the atmosphere and makes glad the continent. All ammoniacal matters in volatile form are readily and almost mechanically carried up by the evaporation of the ocean's surface. It has been clearly established that the amount evaporated from the surface of the Mediterranean alone, would be sufficient, if recondensed, over any one county of our State, during 24 hours, to so deluge it as to denude the surface of every vestige of the handiwork of man. With this fact before us, it is not difficult to see why the giant mind of Liebig supposed the atmosphere to contain ammonia, nor for us by his teaching to understand how this ammonia is again deposited where most needed for the sustenance of man. This subject in its minutiæ might be carried on for hours, and not without interest; but I think I have said enough to show that nature's laws in this, as in all else, are perfect, and that even the mighty ocean, obedient to her will, renders a just account of its stewardship to father earth.

Prof. Mapes—The cultivation of the potato is of the highest importance, and it will give me pleasure to state my experience, and perhaps to offer an opinion on such points as seem to me to have been definitely settled. The usual mode of planting and of culture is so well understood as to render a repetition unnecessary. The errors I conceive to be, first, in the selecting of medium or small-sized potatoes as seed; secondly, in cutting them; and lastly, in covering them with too great a depth of soil.

The experiments made by Gen. Beatson on the island of St. Helena, by the request of the British Government, has settled many facts in relation to the culture of the potato. These experiments were made on an extended scale, with great exactness, and often repeated. From these experiments we learn that the largest weight and measure of potatoes may be obtained by using the seed potatoes whole and of the largest size. Of course a greater weight of seed is used, but with greater profit as compared with the area occupied. The potato, in farmers' phraseology, may be called a tuberous stem plant, all the tubers growing on the stem and never on the roots. Gen. Beatson therefore recommends as the result of varied experiment that the potato should never be covered to a greater depth than six inches, and this depth should be attained as soon after the planting as practicable. The first covering may be three inches, and as soon as four inches of growth is made above the surface of the soil, the other three inches of soil may be added, and the drills should be of such depth as to leave the entire surface of the field level after the addition of the last three inches. By this arrangement, flat culture may be pursued and the crop will be larger than if raised in hills or elevated rows. In support of these opinions, permit me to state, that I have repeated his experiments, and found the results stated by him to be practically true.

It may not be out of place, having arrived at the facts, to endeavor to understand the cause. First, the advantage of flat culture as compared with the hilling of potatoes. As soon as the stem is plainly formed, a certain number of tubers are appended to its sides, and should we pile the earth higher against the stem as it proceeds in growth, a second set of tubers will form, even after the first set has attained some size, and thus the pabulum intended by nature to form and feed the earlier tubers, will be divided between the two sets, leaving them of varied size, and preventing the entire development and perfection of the earlier tubers, and therefore no perfect potatoes are formed, while the imperfect product is of varied size and inferior quality.

By the system of flat culture, the first tubers being the only ones, increase rapidly in size. No new ones are formed, because

no new part of them is covered by soil. The whole result of decay of the original seed tuber goes to feed these potatoes, and regularity of size and superior quality is the consequence. Second. Whole and not cut potatoes should be used, having established the fact, we may thus define the cause. When whole potatoes have been used as seed, with the skin unbroken, we find, after the perfection of the new plant, that this old tuber still remains in the soil of its original size, and slightly increased in weight. Upon a closer examination, however, we shall find that the starch has been removed from this original tuber, and that it has been replaced by water. The immediately surrounding soil, comparatively dry and entirely free from acidity. When cut potatoes are planted, a different result takes place, for want of the protection of the skin, on the exposed part, the set rots, acid is formed, and the germ has a feeble nutrition for want of starch. Nor will the drying of these sets, or coating them with plaster of paris before planting, produce an artificial skin sufficiently effective to prevent the sloughing of the set, and consequent clamminess and acidity always found in the soil immediately surrounding it. I consider these as sufficient arguments to settle the question as to cut and uncut seed.

Thirdly. Large, and not small potatoes, should be selected for seed. The larger the potatoes, the greater the quantity of starch, as compared with the number of eyes. In the smaller potatoes, the materials intended to form starch have not perfected their growth and combination so as to become perfect food for the new plant. By increasing the size of the seed each year, it is well known that we increase permanently the average size of the sort. My experience with the mammoth nutmeg potato goes to prove this fact definitely. It is now a fair sized potato, and six years ago it was entirely too small to be merchantable. In corroboration of the above, permit me to state, that a few years since, one of our members suggested the propriety of gouging out the eyes from potatoes, with the ordinary chairmaker's gouge, so as to leave half a sphere of the flesh of the potato attached to each eye—thus enabling the farmer to use the mass of the potato—planting the eyes only. We tried this plan, and found that the eyes from one bushel of potatoes would give the same number of potatoes as the

results of another bushel of the same kind of potatoes planted whole, but, alas! the weight and measure of those raised from the eyes was less than one-third of that of those raised from whole potatoes. The parings or pealings of potatoes are sometimes planted as seed, and the eyes will certainly grow, unless the potatoes were too economically pealed. But a continuance of such practice, in addition to the reducing the amount and value of crop, will eventually produce very small potatoes. A few years since a German method for raising potatoes went the rounds of the agricultural press, and we tried it fairly and faithfully. It was stated that when the plants were one foot high, they should be bent outward from the center of the hill, and covered with soil to within an inch of their extreme ends. When another foot of growth had transpired, it should be bent inward, and again covered as before, and so repeating the bendings and coverings, until the ends of the vines shall show blossoms, where the process is to cease, and that the result would be, that potatoes would form all along the stem, producing fifty times the number that would be produced by the old system. As to number, it proved to be nearly or quite true, but as to size and quality, they were miserably below any potatoes we have ever seen. From all this it would seem that practice and theory go to sustain each other, and it is, therefore, fair to infer that the theory is not to be considered as hypothetical. The speaker afterwards remarked upon the use of muck in growing potatoes, charcoal, &c., but our space will not permit us to extend our notice of the learned and practical instructions given by the professor to a very attentive audience.

Mr. Robinson was satisfied that the theory and practice of Prof. Mapes as to planting whole sound potatoes, were undoubtedly correct; his own experience convinced him that it was the true way. I have planted full sized sound potatoes in the same way as the sweet potato. I never plow them. We used the hoe, and had the largest and best crops. On mucky soil, with plenty of potash in it, they grew thrifty and healthily. After this mode of planting for some years, without having had the least disease, the rot appeared first in the old fields, and then in more recent cultivated lands; and it traveled through us and on to California, for

aught he knows. They plant the potatoes in Richmond, Virginia, in the same way as the sweet potato, and as the potatoes come to maturity, they grope for the large ones in the hill, pull them out and leave the others to grow, a method by which a considerable saving is effected. It is hardly lawful to say any more on potato rot, but I ask leave to exhibit a potato which lay a short time in contact with a diseased one. Here, you see, the part of the sound one which has lain in contact with the sick one, shows that it has caught the infection.

Mr. Gore asked Prof. Mapes how he sowed potatoes.

The professor replied, in rows, two feet and a half apart; I plant from 10 bushels to 25 bushels on an acre. I raise potatoes for sale as seed. As to the rot, as soon as I got my soil in proper balance, I had none of it. When all the necessary ingredients are in a soil, there is no more disease.

Mr. Scott adverted to the Michigan secret. Some of his friends are about to try it. But the truth is, that formerly the rot was unknown, let the soil or weather be what they might. The question never arose in Ireland until after the disease had arrived.

Professor Mapes, in answer to a question as to the use of charcoal as a preventive, replied that he had put charcoal dust in the drills, and then put in potatoes; these never were diseased. While I am up, let me mention the suggestion of a gentleman to me lately, of trying the effect of a plough made of two metals, that electricity may be exerted in the soil for the benefit of the plants! He thought the idea justified by the fertility of a spot struck by lightning, and the grass, &c., scorched by the lightning, but Prof. Mapes concluded that the conversion of the vegetation to charcoal by the flash, was all the benefit received in that case, as it is in any place where fire has carbonized the surface plants. Another gentleman buried plates of metal and wires deep in his fields; trenching it would be far better.

Mr. Youmans—Will muck answer as well as charcoal?

Prof. Mapes—It is good as a deodorizer, and by the slow action called Eremacausis, it becomes good for vegetables. I wish not

to be understood as saying that charcoal is a panacea for the potato rot.

Mr. Solon Robinson—In 1841, I took some Carter potatoes (which some say have not been diseased) to the west. In the very first season they all rotted, and they were the first case of the kind in that quarter.

Mr. Kellogg, of Oswego—We tried all sorts of experiments in soils and every thing in our region.

Dr. Church—Plain men, having no speculative ideas, tried the potato on spots where brush had been burned, and the crop was uniformly healthy. There is a mistake in what was said lately as to the potash scrapings. I tested some of them.

Mr. Tucker placed on the table specimens of wood, (black walnut,) bent according to the new method of Blanchard, of Boston. A plank of 8 inches in breadth and an inch and a half thick, is bent into the form of an ox bow, so that single bows are readily sawed off from it. Ovals, chair bottoms, round, or with what is called round corners, all kinds of curves required in cabinet work, were exhibited. In all these specimens the outside surfaces were as fair as if the wood had never been bent.

Prof. Mapes spoke of the invention as a very important one, and of its true character; that the great ingenuity of Mr. Blanchard was here again demonstrated. By means of an adequate pressure upon the ends, the capillaries being forced into each other, like the section of a telescope, (somewhat), all the outer surfaces being left as smooth as before the bending. Great strength of furniture is gained by this highly ingenious process, and its uses are too numerous to be adverted to.

Judge Livingston laid on the table, for trial by members, a basket of snow apples, grown on his farm on the Hudson River. They have a very agreeable taste, are sound as marble, and of a beautiful light straw color.

Mr. Mead, of Greenwich, Conn., laid on the table, two samples of seedling apples from his farm; one of middling size, greenish

color, is from a graft of a seedling; the others were pear shaped, red striped, (something like what our huckster's call 'ladies' fingers'), of a moderate size. The club thought the apples were good.

Judge Livingston presented cuttings of the fine flowering shrub, corcoris japonica, and seedling Isabella grape vine.

Gen. Chandler presented cuttings of the true basket willow, the salix viminalis, from his garden; also fine cuttings of Isabella grape vine, from same.

THE SWEET POTATO.

By the Secretary.

Lindley, in his Vegetable Kingdom, classes it in his order 241, as one of the bind weeds, or convolvulaceæ—very abundant within the tropics, but rare in cold climates. Among them are scammony, a Syrian perennial; the ipomæa tuberosa; the Spanish arbor vitæ, of Jamaica; the pharbitis cathartica, of St. Domingo; two Brazilian species, called by Martius, piptostegia gomezii, and pisones, and others; exogenium purga, a beautiful twiner, with long crimson flowers; but other species are also collected under the same name, &c., &c. Our common sweet potato is the batatas edulis.

SOLANUM.

There are sixty-six species, most of them natives of the East and West Indies. The remarkable one, solanum dulcamara, is a native of Britain and Africa, is a slender climbing plant, not fit to eat. Solanum longum is herbaceous, grows rank, is boiled and eaten like the egg plant; the tomato; the egg plant; solanum melongena, solanum nigrum, or black potato; the nightshade (poisonous); solanum rubrum, or red potato, called by the negroes of the West Indies, where it grows, guma—it possesses an agreeable bitter taste, is served up like greens or spinach; solanum tuberosum, our common potato. In the garden of Chatworth, there is one bearing splendid flowers, called solanum grandiflora. The tomato graft on common potato is very easy, and we have potatoes in the ground and tomatoes in the air.

STARCH.

Revue Scientifique.—Paris.

The essay on ligneous (woody) matter, already inserted in this review, was undertaken with a view to make a formula or general theory, for which starch may serve as a point of departure, and to connect with it all the compounds of the vegetable kingdom, by following the series of transformations, by means of which nature gives birth to the most complex compounds, with which organic chemistry has to deal. At this day, in studying the nature of starch, we shall pursue our work, and try to make a settled system, to contain the whole chemistry of organized beings.

The Starch, which we have taken as the subject of our studies, was extracted from the common potato. That body, as far as is known, is considered homogeneous. That it is formed by the union of many concentric beds, for all have the same nature and the same composition. They all differ more or less in the more or less great aggregation of their parts. The most characteristic property of starch is it powerful hygrometric quality; its very facile alteration by the action of heat for a temperature of 60 degrees, (139° of Fahrenheit) a heat excited by friction, suffices to change its whole nature completely. In order that we might have it pure and perfect, we have carefully avoided the effect of heat upon it in our effort to deprive it of water, to which it has so much avidity. We have limited ourselves to washing it in cold alcohol, then in ether, and have let it remain in the solvents for many hours, in order to deprive it completely of the essential oil which accompanies it. After the washing in ether, we washed again in alcohol, then in water. We then placed this organic substance thus purified in the receiver of an air pump, where it remained for eight days over a vessel containing concentrated sulphuric acid. After these various operations we inclosed the starch in a small tube of glass, very dry, we weighed in the tube, and in mixing rapidly with the oxyde of copper the temperature came from 20 to 30, (75° to 85° Fahrenheit) or more.

Solon Robinson adverted to the distinguished fertility of the lands of Louisiana formed from the inundations of the river Mississippi, their fitness for rich sugar growth, of the great levees

made by immense labor for an hundred miles on the river banks to contain the great freshet waters of the river, of the results of river deposits when a crevasse occurs, the way in which the alluvium is deposited—as in the way of the crevasse stream; it accumulates in the rear of obstacles such as trees, stumps, &c., to the depth (sometimes) of two feet. Ditches are formed from the levees to the interior to carry off the water. As we pass such spots in our steamers, at times of freshet, we from the decks look down on the heads of the people working behind the levees. The current frequently changing, there often are vessels aground where not long before there had been deep water. In places the river banks are thirty or forty feet high—perpendicular. They are often tumbled into the river by the substrata becoming too saturated with water to sustain them. So sometimes docks, wharves and the buildings on them suddenly plunge into the stream and are seen no more. At the Chickasaw Bluffs are some of about a hundred feet high; they occasionally tumble in the deep below. The soil of the sugar plantations contains much clay.

Judge Van Wyck.—That the late Mr. Knight, the great English horticulturist, thirty years ago recommended in planting the potato to plant the whole potato—by no means to divide it; that in doing this its nutritive powers were divided and weakened. Let these be concentrated on fewer shoots or sprouts, and in the end there would be a greater yield and of a finer quality. Mr. Knight in his extensive gardens in the neighborhood of London cultivated all the choice fruits and vegetables, and with great success.—This was long before the potato rot made its appearance. His idea was, that this useful root could, with proper tillage and cultivation, be made to produce 1,000 bushels to the acre as well as 500 or 600, which was the most it was doing then. Since the rot appeared times are changed as regards the potato, both in quantity and quality. Nobody thinks now of getting more than two or three hundred bushels, and those generally inferior in quality, and the great hazard every year of their being attacked in a greater or less degree by the disease. The Rev. Mr. Cartwright, of England, a good scientific and practical farmer, says he has succeeded best of late on a sandy loam—almost pure sand. This,

made of the proper texture and consistence, by pond and ditch, mud or muck, perhaps a little sprinkling of lime or gypsum, that he has raised 300 bushels in this way without disease. Mr Eastman, a gentleman of Oneida county, New York, last year [1852] made an experiment with various kinds of manures, all tilled alike and of the same kind of soil—a greensward, and gravelly loam, ploughed early in the spring nine inches deep, manured with special or artificial manures, barn yard, fermented and unfermented, broadcast and in the hill, pig, fowl, sulphur, saltpetre, used separately and on different parcels.

The pig manure gave the greatest yield, 271 bushels to the acre; unfermented barn-yard manure, spread broadcast, the next, 243; fowl, 229. The last transactions of the State Agricultural Society contains all the particulars, clearly and explicitly stated, in a table by Mr. Eastman. All the potatoes were free from the rot; they were of the red kind, called "Irish Lunker;" planted most of them the latter part of May. It is generally thought the potato rot is diminishing in the world, and has been for the last two or three years. It is not extinct, though, by any means, as last year's results, in different localities, both here and in Europe, testify. It is here thought to be less virulent, and the extent of the damage done by it considerably more limited than in former years. This is certainly some relief, and it is to be hoped it will go on diminishing every year, until it dwindles down to a point and finally disappears.

A letter from the Hon. Richard Bacon, of Simsbury, Ct., to the secretary of the club, was read, and the following valuable remarks are extracted from it, viz:

I find an article by the late Prof. Norton, on the subject of resuscitating worn-out lands. He suggests ploughing in green crops, such as clover, &c. Is he right?

I see in the proceedings of the Farmers' Club, that Mr. Tuttle, (of New-Jersey,) says:—"Cover up your land, that is, let the clover, &c., fall and lie upon the surface, and give the land rest. The great desideratum for farmers is how to restore and improve worn-out and exhausted soils at the least expense, and in a way

attainable by every farmer within himself, or by means at his command, with but little outlay of cash. That is the important question."

I fully agree with Mr. Tuttle. I came accidentally into the occupancy of land, part of which had borne corn and potatoes for many years, and had but little, if any, manure, and it was badly exhausted. I sowed it to oats, clover and timothy. I got a very light crop of oats, but the season was favorable and the grass took well. I gave it a sprinkling of plaster, and next year the crop of clover was heavy, but having no place to put it in, and hay being plenty and cheap, I did not cut it. I turned in my horses, and there being plenty of better feed than the clover, they ate very little of it. It fell down and lay on the land. The effect next season was very marked by a very heavy crop of herd's grass, so much so as to attract the notice of the neighboring farmers, who thought me unwise in not taking off the clover. That piece of land has not yet lost the benefit, although it was done ten or twelve years ago. This led me to a train of reflections, and I came to the conclusion, as others have done, that covering the surface prevented exhaustion. Under old houses nitre is formed, under boards or wood piles, or other covering, the land improves. Does not nature adopt the plan by covering the surface with leaves?

Farmers generally have small means over and above their lands and buildings, and are usually unwilling to invest their means in anything but more land.

The great question is, how land can be restored, and by such means as are attainable by all? As to the artificial manures, they are too expensive, and too apt to be false.

Vegetation near cities no doubt gets the benefit of the miasm from all the causes existing in them. Some ask, why, then, do trees suffer in the air of cities? I answer, for the same reason that you may overfeed a horse.

As to deep ploughing, I don't doubt its value in many soils, but not in light sandy soils, with gravel below.

Don't understand me as desirous of depreciating the honest artificial manures, but they are so dear that I cannot afford to use them. Is there not some other plan? Farmers are an incredulous set; they will have proof. Can you give it to them?

I will send you the grafts and scions soon.

Mr. Solon Robinson proposed as a subject for next meeting—What is the most economical plan for fertilizing lands?

The chairman reminded gentlemen of the importance of bringing some of their choice grafts, cuttings, seeds and plants to the meetings of the club, at this season, for exchange and distribution. That this was the best way to get good things, for every gentleman who brought an article would of course bring a good one. Such has been the constant practice in this club since its foundation.

The club then adjourned to Tuesday, March 29, at noon.

H. MEIGS, *Secretary.*

Tuesday, March 29, 1853.

Present.—President Tallmadge, Judge R. S. Livingston, A. B. Archbald, Messrs. Mapes, Dr. Enderlin, H. Greeley, S. Robinson, George Dickey, Gore, Low, Armstrong, Coleman, of Brooklyn, Holmes, Rockwell, Judge Van Wyck, Allaire, Lee, Youmans, Swaine—in all forty-three.

Richard T. Underhill, M. D., in the chair.

The secretary read the following papers, prepared by him.

JAPAN, (called NIPHON, CHIPON, JEPUEN.)

A cluster of Islands of which the largest (Japan) is 700 miles long and 80 miles wide. Discovered first about 1542. It was first mentioned by Rubruquis and Marco Polo—Marco Polo calls it Zipangri—about 500 years ago. In 1542 Fernando Mendez Pinto, in a Chinese junk, was wrecked on the Island. Soon afterwards the Spaniards visited it in the same way, by being

wrecked there. In 1609 the governor of Manilla was wrecked there and was sent by the emperor to Acapulco. In 1611 the Spaniards sent an embassy there with presents; but the emperor had then exterminated the christians. The Dutch, however, managed to penetrate Japan soon after, by means of an Englishman, William Adams, who in a stray ship of a fleet got to Japan. The emperor treated him very kindly, but would not suffer him to leave the country. The Dutch are the only people ever allowed the trade, and that by suffering humiliating treatment. Although it has since been frequently visited by Europeans, all of whom were confined to the port of Nangasaki, yet no plan of that harbor, even, had ever been taken, nor even the latitude or longitude ever correctly determined, until by Krusenstern in 1804. Kœmpfer gave quite full accounts of this country, about 150 years ago. Thunberg also gives interesting accounts of it. The winter is severe; the winds from the Arctic very cold. Snow falls deep and the frost is intense. Their steel is not surpassed by any known in the world. Their sword cuts asunder a large nail, without harm to its edge. So careful are they in agriculture, (says Thunberg,) that they never can find in the field of grain, any plant but grain. Their diet consists of a greater variety than any other nation. They breakfast at 8 o'clock, A. M., dine at 2, P. M., supper at 8 o'clock, P. M. The Portuguese introduced tobacco into Japan, and now both sexes smoke it. Polygamy exists among the upper classes.

The people resemble European races more than any other nation. Their complexion is yellowish, generally, but the ladies perfectly white; eyes brown to black; head large; hair black, thick and shining, from use of oils. They are rarely corpulent; strong, intelligent, inquisitive, ingenious, frugal, sober, friendly, courteous, frank, good humored, upright, honest, brave and unyielding. They conceal their feelings and passions extraordinarily; are very cleanly.

They take whales, and their markets are supplied with its beef. Cats in every house; poultry plenty; wild geese plenty. Herons walk after the ploughman in the furrows. Teal, quails, crows, bullfinches plenty.

The cultivated fields have no fences; horses and cattle scarce. Buffaloes are employed.

Every house has a court in which are trees, flowers in pots, and a bath. Fires are wanted from the month of October to March. They burn charcoal in copper stoves. Their dresses have not been altered in fashion (they say),in the last two thousand, four hundred and sixty years. A sort of night gown, long and wide, worn by all ranks and ages. Shoes of cotton, stockings, cotton. No quarters on the shoes; slipped off when they enter a house; the stocking is fastened by a buckle. Carpets very neat. Bare headed, winter and summer, unless on a journey. His coat of arms is painted on his garments. They say that they first invented powder and fire-arms. They are vastly superior to the Chinese in their use. No medicines but vegetable. They celebrate New Year's Day as we do. They have potatoes, but they are poor.

Thunberg, a surgeon in the Dutch East India service, landed in Japan, in 1773, and remained there five years, collecting plants, and observing the manners &c., of the people. His first work, 'Flora Japonica, Plantas Insularum Japonicarum', (the flowers and plants of Japan), was published in 1784, at Leipsic. From 1794 to 1805, he published, in folio, his 'Icones Plantarum Japonicarum,' (drawings of Japanese plants).

The extreme caution they practice as to letting any thing, whatever, in or out of the country, leads them to examine some of the eggs of any parcel imported or exported. The hair, clothes, every package and box are examined; they sound boxes, &c., for hollow places; examine feathers; they run iron rods through butter and cheese in every direction; confectionary examined. They search all the Japanese as well as strangers. The Japan officers alone go unsearched.

They believe in a Supreme Being. Thunberg saw two temples of the God of Gods, of majestic height. The idol or image of the Supreme Being was of wood, gilded, and so large, that six men can stand on one of his hands, and his shoulders are thirty feet broad. In the other temple are 33,333 little gods, standing around an Image of the Supreme Being.

The American Institute has addressed a request to Commodore Perry, to make it one of the distributors of the plants and seeds which he may have the power to obtain from that singular and interesting people.

(Lindley's Vegetable Kingdom, 1 vol. octavo. page 908. London 1846.)

In this deeply interesting volume, the author, in addition to his own labors, adds the authorities of no less than five hundred and twenty-four learned botanists and other men of scientific character. Thus, whatever be the plant in question, he presents testimony overwhelming, as to its nature, uses, climate, definition, and all about it, not only by virtue of so grand a jury of inquest of modern times, but of their reading and understanding of all knowledge of all times and countries. He therefore calls it the Vegetable Kingdom. He might have said empire; for it embraces all the kingdoms of the vegetable world. The work is illustrated by more than five hundred accurate drawings of plants, which admirably assist a student in forming true views of the varieties, so that, after well studying Lindley, he may safely speak of any plant at sight. Nothing is more pleasing than the possession of this ability, when one is with companions, surveying the gardens, farms, &c., and it forms a high distinction for the possessor of the science, who can speak all that is known of a plant. And this is not merely a scientific just pride, but it causes an extensive diffusion of true knowledge of plants among all men.

If our planet is to have an increased population, (which lately appears quite probable,) so that myriads of men, enlightened, are to cultivate the never cultivated fields of Arabia, Africa, and America, this true knowledge of plants will be of unspeakable advantage. In the agriculture of the inhabited civilized world, this science, with chemistry, has within one generation past almost doubled the produce of former ages. The government of France recently sent Vice Admiral D'Urville three times around the globe with instructions to bring choice plants from all quarters. He did bring a prodigious quantity of vegetable riches. The Morea and Algeria have been visited by scientific men. Botanical libraries are not numerous in Paris.

Revue Scientifique.—Paris. (Translated by H. Meigs.)

CHINESE CHARCOAL.

The manner of producing it both as to quality and quantity, seems to me to be very superior to any hitherto known to us, and therefore I take pleasure in translating the article:

Major Kovanko describes it in the Journal of the Mines of Russia. This engineer was one of the Russian Legation at Pekin for many years, a position which gave him facilities in studying the arts and handicrafts (*arts et metiers*) of the Chinese. Our readers will discover the ideas of Mr. Mayrhofer, in the process of the Chinese.

They carbonize the wood in subterranean ovens, which are dug open to the sky where the land is sandy, and cover it over with earth after it is filled with the wood; but where soil is clayey or compact, they excavate under the surface. The charcoal ovens, (*tsza-yao*,) in light soils, are never dug more than about five feet deep, with a diameter of about fourteen feet. In the side of this they pierce a hole for a round chimney, the bottom of which is a little deeper than the oven; the chimney is carried up to the height of about four feet above the ground. The bottom of the chimney communicates with the oven by an oblong trench about fifteen inches long by four inches wide—the size is adapted to the quantity of wood.

In the oven in question, the chimney is wider at the bottom than at the top, being about fifteen inches across the end of the little cavity under the chimney; they make a conical trench so inclined, having the wide end inside next the bottom of the chimney; in this they fix a tube, whose small end appears outside of the oven. This is to serve for setting fire to the wood at the bottom, and also to supply the necessary amount of air needed to get the wood on fire.

On the bottom of the oven they first lay light branches, very dry; over this, pieces of wood cut short as nearly alike in size as they can; these are placed upright, close together, and then another layer like it, and so on till the oven is full; then they cover all up with a sufficient quantity of earth to confine the smoke.

They apply the fire through the conical tube. As soon as an abundance of smoke comes through the chimney, they close the tube so as to let in a very small quantity of air. In five days after firing up, the smoke from the chimney appears to be clear. When the smoke becomes transparent, it proves that the combustion of the volatile parts is finished. Without delay they then hermetically close the tube and chimney. In five or six days the fire is extinguished, the charring completed, and they open the oven.

In stiff clay they excavate the oven without disturbing the surface.

Experience proves that where wood is freshly cut, there is less waste. One hundred parts give from thirty to thirty-five parts of charcoal, which is very sonorous, hard, and has no piece partly charred.

In our charcoaleries, the actual experience is, that we obtain but twenty-four per cent, while the Chinese get thirty to thirty-five. Our most perfect methods those introduced by Mr. Philorier, and by Mr. Foucalt, leave our European charcoal making (carbonization) far below the Chinese—an important consideration where timber is scarce and becoming more so.

Journal D'Agriculture: Montreal, Lower Canada. March, 1853.—Transactions of the Society of Agriculture of Lower Canada. [Translated by H. Meigs.]

MANURES.

The more thoroughly straw manure is covered with the soil, the better we find it. It is a true maxim every where, and under all circumstances, that when the manure is covered up by three to four inches of earth, it is sheltered from all danger of loss, while the soil (according to Mr. Way) has power chemically and physically, to retain the ammonia and give it with facility to growing plants. The pernicious practice of spreading manure upon the surface, and leaving it there to bleach for weeks, and even for months, before it is turned in, still prevails in several counties in England, and the practice is defended by myriads of cultivators of clay soils. If the perpetrators of such an enormity had any reason for it, science is at fault, all analysis is illusion, and ammonia and all the

family are impostors. The practice in Syria is, now, to make cakes out of dung, and fix them on walls to dry in the sun, for fuel —they would be about as good for manure as that left on the ground exposed to the weather, winds, rains, and sun's rays for whole months.

[From the same.]

A writer of the Society recommends warmly the establishment of museums for farmers, to contain samples of all seeds, plants, implements of the farm and garden, of every description. Such a museum, properly managed, would be very instructive to all desirous of knowing all the best means of agriculture and horticulture.

Solon Robinson.—As the Gurney is not here yet, I will say a few words on the subject of the day. What we all want is involved in it, and there is much to be done in order to settle definitely so that all farmers may have the cheapest and easiest methods of fertilizing their lands. In Virginia I know a farm, of a thousand acres, in which the surface covering of straw avails more to the crop than turning it in. See the clover rising through the straw as strong and rich as if the ground was in the best condition from buried manure. This is the work of one of the best planters in Virginia—and better, much, than putting that straw in the barn yard to be converted as usual into manure. One half of which, at least, is water, so that you carry two loads of the manure to your field, of which one is nothing but water—just a double trouble and cost. The actual farmer on that plantation is a Scotch gentleman, very intelligent. He uses his straw in the stable only for littering purposes.

Mr. Gore said he had spread some salt hay over a bit of his meadow not long ago. The other day, on gathering it up, he remarked how finely the grass had grown on that spot.

The Chairman saw the high importance of this day's subject—that its discussion could hardly be concluded to-day—so many facts and views come up in relation to it. The question of climate comes first. Ours is a dry one. We have a powerful sunshine and a great deal of it. This circumstance has much to do

with the question—a topdressing here and one in the moist cloudy climate of England, are very different in their effects.

Here all the gases, which are extracted by the great heat, pass into the air, and are swept away by the winds, and for the most part lost to the farm forever. Covering is, we know, of great utility. Cover your wheat with the leaves of pine trees, and you will derive benefit from it. When you put well-rotted manure on the top, and let it lie, the winds take rapidly away from it some of its richest parts; put it on the slope of your farm, and the rains wash the finer constituents to the valley below. That is as good as a covering. It loses nothing itself, while it stops those finer elements of fertility from escaping so fast into the air, for they are continually rising from the bottom of the soil. Manure, when it is perfectly ripe, must go into, and not upon the land. If I commit any errors on these subjects, I hope that they may be blown away as by a blast, for I want no more nor less than the truth. The heat of the sun penetrates deep in our soil; not so in England. Those persons who come here from England soon learn many new lessons, such is the difference of climate and circumstances. We have many re-published English works on farming, which have done prodigious mischief here on that account.

Mr. Robinson—I know, perhaps, fifty cases of like success with that of my friend on his thousand acres. One example is seldom satisfactory; repeat, and your theory, after a while, becomes a fact.

Dr. Underhill—I have said that the English works on agriculture, republished here, have proved a curse to us. They are learned and excellent, if carefully adapted to our peculiar circumstances. Many of our young farmers, who have followed these English directions, have been well laughed at by the old farmers.

Judge Van Wyck—I agree in the main with what our chairman has said as to the best mode of managing wheat straw as a manure for land. It has been stated, that at the South, and especially in Virginia, the practice generally is to thresh the wheat immediately, or soon after cutting it, and spread the straw on the fields fresh; that this was more in conformity with Gurneyism, and was

well adapted to the southern soil and climate, it was covering the former from the sun, and aided much the succeeding crop of clover. I have been through some parts of Virginia, and have observed some of their farming usages. The farms there are generally much larger than they are in the Eastern and Middle States. They go over a great deal of ground with wheat, often from a hundred to one hundred and fifty acres, and sometimes more. They thresh it usually on the ground, as nearly in the centre of the whole as is convenient. Immediately after completing the threshing, they haul the straw into the surrounding fields, and spread it. This saves them much labor and time; to draw their wheat home in the sheaf, as we do North, and thresh it in their barns, and then draw the straw out, either dry or half-rotted manure, would almost triple their labor, but the wastage is more than the value of the labor saved; they have the produce of so much ground to handle, although much of this is usually thin and light, still the whole makes a pretty large heap. As to the Gurneyism of the practice, whether it is of much value as manure or covering, wheat straw has no succulent matter in it. The juices are all dried out when the grain is ripe and hard; it is all, or nine-tenths of it, mere wood, which, when threshed as they thresh it, are broken up into so many little sticks, and carried and spread out, to be again exposed to the sun and re-dried and rendered still more worthless as covering or manure, a great portion of it is spread thinner over by the winds, and some blows entirely away. With us at the North it is different: our farmers, nineteen out of twenty of them, carry their wheat, as soon as cut, in the sheaf to the barn, and thresh it with a machine that does not break it up so much. After threshing, the straw is put under cover, and kept from the weather as much so as they keep their hay, till winter, when it is given to their stock for litter and bedding as they want it, and finally, with a dozen other different things, makes up what is called barn or farm-yard manure, or the compost heap; in the spring it is carried out and put on the land, about half or two-thirds rotted, containing more or less of all the ingredients, organic and inorganic, which makes the proper food of plants.

Which system of these two sections of our country is the best? Let the results or crops of each, in the grains or grasses, decide. It is believed it is pretty well settled in most people's minds, to which the credit is due, without here particularizing. There are in some parts of Virginia good farmers and good lands, and the latter, when well managed, produce fair crops.

Solon Robinson—I proposed the subject of the day, and have to say what is already, for the most part, in my treatise upon the History, Composition and Use, and mode of applying Peruvian Guano upon every crop in the United States. Numerous experiments are here recited, made by many of the most respectable gentlemen in this country. Bone cannot be supplied in sufficient quantity and requires a preparation which Guano already possesses. The following Analyses of Bone and Guano enlighten us:

	Bone.	Guano.
Organic animal matter,	33	56
Phosphates of lime and magnesia,	59	26
Carbonate of lime,	4	6
Salts of soda,	4	10
Salts of potash,	a trace	a trace
Silicious matter,	0	4
	100	100

These substances are found in Guano already in a pulverized state, while Bones have to be reduced by mechanical or chemical means to the same condition before they are of any use as manure. Professor Mapes said in one of his letters of advice, "As no farm, under ordinary usage, will supply as much manure as may be used upon it with profit, I am glad you intend to use Guano, as it is an admirable manure, replete with many requirements of plants. The ammonia of the Guano is in the form of a carbonate, and, therefore, so volatile as to escape from the soil into the atmosphere before plants can use it. You will readily perceive, therefore, that the sulphuric and phosphoric acids require amendments, and the ammonia should be changed from a carbonate to a sulphate of ammonia, which is not volatile. All

this can be readily done by dissolving bone dust in dilute sulphuric acid."

Prof. Mapes—This is a most important subject. It is difficult to know what part of it to refer to. I rise in part to endorse Mr. Robinson's views of it; mine most fully accord with his as to the value of guano as a fertilizer, and if there be any difference at all, it would only be in relation to the mode of preparation. I wish to avoid going into the rationale, for the reason that it would be out of place here, and shall therefore only make such remarks in relation to chemistry as will directly apply to the points in hand.

It will be sufficient to remark that all soils may be divided into two great classes, namely, organic and inorganic substances, and that if these are in a certain balance and properly conditioned, so as to avail of nature's laws by the free admission of atmosphere, and retention of such gases from it as to enable plants to make use of them, we should then have a perfect soil. There are a few places where such soils exist, and by common consent a few such localities have been pointed out; and hence we find in some of our books analyses of soils fertile without manure, and they are the standards to which we look. It is also well understood that the whole quantity of each material present in these soils need not be there, to produce the same results; yet it is equally certain that the said necessary constituents must be in the right relative proportions.

We all know that every soil is composed of sand or clay, and sometimes of both, and that the ingredients upon which plants feed are contained but in a small per centage beyond these two leading constituents. But if the ingredients of this small per centage with which the farmer has to deal are very deficient, his only true mode of operation is to have an analysis made of his soil, and place this analysis alongside the analysis of the soil fertile without manure, (this standard that has never been disputed) and by this means see the differences existing between the two; and such comparison will be a true guide, if not as to quantity, certainly as to materials to render them alike.

I have been employed to examine hundreds of soils, (and have now on hand upwards of four hundred for analysis, as well as accompanying letters of advice) and I know of no case where the farmer has not increased his crop and profits 25 per cent. I am also happy to be able to state that there are many instances of farmers doing this without my aid; but if they do, they have taken the same course, and where this has been strictly observed, there has not been the first mistake.

Now suppose the farmer should find his soil deficient in potash, soda, lime, chlorine, and the other elements necessary to form plants, and that when he calculates the quantities required to amend an acre he should find their cost entirely beyond the worth of his whole farm, it don't follow that he should add the whole amount at once, but rather in the right relative proportions to each other; for instance, should the figure for potash be 10 and sulphuric acid 2½, &c., he must use the same relative quantities of the other constituents in the same ratio that they are given in the analysis; and it is not necessary to add them in such large quantities as would ensure the full amount at once. I make this statement without the fear of contradiction, unless it be by mere assertion.

The farm I now occupy I went npon without the means of improvement until I first earned them. It was in very bad condition, and was considered to be scarcely worth the fencing. I took the course already stated to you, the first year, for the reason that I could do it more cheaply than to carry the stable manures; and the consequence was that I immediately put it in heart; and no year has transpired that I have not had as large crops as anybody else.

After having experimented upon many hundred farms, and finding that notwithstanding many farmers were ready to enter into this view of the subject, still many more were not, for the reason that they feared I might make a mistake as to the proportions needed, and therefore said—"Cannot we get something, all ready, that will do this, and that will contain all the constituents necessary for plants?" I answered—"*No*, I don't think you can;" but perceiving that there was no other way of reaching the great

class of farmers, I placed on a table my letters of analysis, copied off the deficiencies, averaged and tabled them; and when my list was complete I took up the analysis of Peruvian Guano, and the result was that I held tables that were supposed to be similar; but they differed very widely, however, in relation to the relative proportion of these ingredients contained in guano.

Now with that result before me, spreading over more than two hundred farms, and with universal success, I had a fair standard to appeal to; and that notwithstanding the large amount of phosphoric acid contained in guano, still it was not one-third the quantity required by plants as compared with many other of its own constituents. The ammonia was in the form of a carbonate, and required change. In referring to another item, sulphuric acid, it had been distinctly short, and so, too, was ammonia, two constituents so necessary to act as stimulants to the entire consumption of its other less active ingredients. I thus tried what manure I could make with profit, and had it theoretically, requiring only combination with practice. I arranged a piece of land in spaces of twenty feet wide each, and applied guano in different proportions, spread at the rate of 25 lbs. to 800 lbs. per acre, and then crossed these strips with other lines, and in these other lines I took each of the separate constituents of guano and applied them. Upon making a map I found I had the different varieties in every proportion that you can name, and I raised crops upon these pieces, an upon examination where I found the most brilliant squares I appealed to my map, and readily calculated the prices per cent. of such material at that point, and when I had worked these out I formed a manure which I conceived to be the best *general* manure that could be made.

The ammonia in guano is in the form of a carbonate, hence volatile and most readily soluble, and therefore large amounts lost in the atmosphere. Less would be lost if the guano were ploughed under to the depth of fifteen inches, and in relation to this Mr. Robinson's remarks are also correct.

It will meet with the alumina and carbon of the soil which have the power of absorbing ammonia and retaining it. This caused me to get some means of rendering the ammonia non-vola-

tile, or changing the volatile carbonate of ammonia to the non-volatile sulphate, forming what I now call the improved super-phosphate of lime. This was composed of 100 pounds fire-dried bone dust, 56 pounds of sulphuric acid, 36 pounds of Peruvian guano, and 20 pounds of sulphate of ammonia.

Now, take the average of crops, calculate their composition, and place this in the ground, and when one will be used up all will be, because in equal relative proportion. I made it and used it at five cents per pound, and after having tested it for four years, and succeeded in making my farm pay for itself, I thought it fair to conceive that I had proved in my own practice the kind of results I claim for this treatment of guano. I therefore tried to get up a company, and in order to accomplish this, went to capitalists and said, it will pay you 7½ per cent. profit for your money, and thus supply the farmers with an article that will not cost them as much as the carriage of its equivalent of farm-yard manure. I tried to get capital for this, for four years, and was about to give it up in despair, until one gentleman gave me an analysis of his soil, and told me that he tried it on an acre of wheat one year, and the following year upon 40 acres of wheat, and said, "With it I raised 40 bushels per acre on land which had previously given but 12 bushels." On assuring him that it could be manufactured at 2½ cents, instead of 5 cents, (when done in the large way,) he furnished the necessary capital and established a manufactory.

Those who had one bag last year of this manure, want ten tons this year, and the orders for March are for thousands of bags more than can be supplied, and therefore it will appear evident that I am not making a business card at this meeting. I make these remarks in reply to the statements made by Mr. Robinson.

See what the farmer can do by the use of guano. It is an excellent manure, and surpassed by no other except the improved superphosphate of lime. But the farmer whose land is out of heart in consequence of having had taken from it many crops of wheat, &c., thus carrying away the phosphate of lime, must repair the damage at much cost. This is like the suicidal process of

burning the wood to make potash and thus transport the very raw material to other countries. I would ask such farmers as practice this erroneous system, where they stand with the use of barn yard manure? Do they pretend to say that the excretia of animals contains an equal amount of potash or of phosphate of lime? Such practice removes permanently from the soil its inorganic constituents.

A farmer who has plenty of muck can prepare it to take up the volatile portions of the manure. Let him make a shed, and let the manures of two or three years accumulate, and adopt the plan so well known, namely, placing a cistern at the lowest compost heap, and in this cistern place a pump so that he can pump back the fluid drainage, and this will carry the soluble portions through all parts of the heap, making the mass *homogeneous*. Should there not be enough of fluid drainage in the cistern to pump back upon the heap, perpendicularly, water should be added.

Let him pursue this practice for two or three years, and at the end of that time he will have re-supplied, by the use of guano, his soil, not only with the inorganic constituents, but the stimulant ammonia, to cause plants to make use of them. Then the excess of the materials of the guano may be rendered active by the use of his barn-yard manures, which at the end of the time already named will be sufficient to manure all his farm throughout, and thus put the whole of his land in heart. There is no difficulty, if the guano be properly managed, for a farmer to obtain it, and at the end of one year not only pay for it from the profits arising from the surplus produce, but he may also support his family and have a profit beside.

Twenty loads of manure on an acre of land requiring forty loads, will not produce half the results of forty loads, nor one-third the profit.

It should be recollected that doubling the amount of manure, does not double the cost of tillage, rent, taxes, &c., while it does double the crops in many instances, and therefore while a crop of ten may pay a profit of but one, a crop of twenty will pay eleven times as much profit.

Sometimes the cotton planter sells his cotton at seven cents per lb. and his profit is but one-half cent per lb., now an increase of one-seventh of the quantity would treble his profit, making it equal to $1\frac{1}{2}$ cents per lb. on the lesser crop.

Farmers generally overlook the cost of labor. Who can manage 150 acres of land at once? No farmer has teams enough to do this; nor can he afford to do it, even if he was to have the barn-yard manure given to him at one mile from his gate. It will not pay him. He cannot do it, as I have already said, if the manure be a gift. What farmer has teams enough to carry two thousand loads of dung in the limited time for the putting on of manure? Therefore should he not adopt a plan by which he can do it, not only in a single week, but by a single team? And for this reason I hope that the gentlemen present will give the use of artificial manures their full consideration, so that their lands may be restored to fertility.

Solon Robinson—The remarks of Professor Mapes upon the suicidal practice of some of our farmers, of exporting the fertilizing elements of their lands, cutting their crops shorter and shorter, reminds me of the fellow with the short blanket, who cut a strip off the top to make it longer at the bottom by stitching on there, and so on until his seams took up so much of his blanket, that scarcely any was left. The land suicide carries off of his farm every animal, all the wool, all his grain, sells all the straw, hay, wood, and every thing else, and in a very short time you see him stay and starve, or start for a new digging. He who starves his own land can get none, unless he robs it from his neighbors. My friend in Virginia, on his thousand acres, and with plenty of teams, cannot afford to haul barn-yard manure a mile! We must try the concentrated fertilizers—on some of the poorest land in America they have performed almost wonders.

The Secretary reminded members of the authentic case of worn out land of the United States Attorney General, Reverdy Johnson, which, by common ploughing and manuring, did not yield a half bushel of corn per acre; but when the artificial manure prepared by Stewart of Baltimore, was put on ten acres of it, at the cost of ten dollars an acre, it yielded thirty bushels of wheat an acre.

Mr. E. W. Phelps, of Westfield, Mass., presented for examination his combination bee-hive.

Chairman—Mr. Phelps will now explain the advantages of his hive:

Mr. Phelps—"I am the inventor of this hive, after twenty years experience in keeping bees, and during the last ten of which I have devoted a large amount of time and expense in studying the habits of the bee and moth, and in experimenting with hives of various forms and sizes, I think I have finally succeeded in constructing a hive in every way adapted to the natural habits and wants of the honey bee, and devising the most effectual means to prevent the aggression of the miller and moth, and the best possible facilities for catching and destroying them after they have entered the hive, without disturbing the bees, or exposure to their attacks.

"It is acknowledged by all bee keepers who have given this hive a fair trial, that it combines more convenient and good qualities than any hive previously invented or known:

1. It is adapted to either large or small colonies, as the bees may be made to occupy from one to six boxes (or sections) as their numbers may require, and thereby give them at all times as much or as little room as they may need, at each and all seasons of the year.

2. It affords the best facilities for observing the operations of the bees, for ascertaining the amount of honey stored, and the strength and condition of the colony, without the least exposure to the bees.

3. The arrangement for removing the old brood combs (so essential to keep a colony in health and vigor) and for removing the surplus honey, are equalled by no other hive, as the bees may be made to leave either box before removing it from its place in the hive.

4. It is decidedly the best non-swarming hive ever invented, as colonies may be divided and multiplied without the trouble and uncertainty of swarming; or swarming may be prevented, by

giving ample room, and taking the surplus honey as fast as gathered.

5. It is also the best swarming hive, as the bees may be confined to a small amount of room during the fore part of the season, and thereby induced to swarm early, after which more room may be given them, so as to prevent their clustering on the outside of the hive, and a much larger amount of honey obtained than in any other hive.

6. It affords the bees better protection against the ravages of the moth and miller, and the apiarian better and more effectual means to destroy them after they have entered the hive, than any other.

7. Each section is well ventilated, and the bottom when closed is proof against the miller, but being attached by butts, may be let down and cleaned at pleasure.

8. The bees are better protected against the attacks of both robber bees and millers in this hive than in any other.

9. It affords better accommodations for feeding either late swarms, or for obtaining honey, as the arrangement is such that for robbers to gain access to the feeding operators, they must enter a small passage at the spout, and pass directly through the main body of the hive.

"And in fine, it is warranted to give better satisfaction upon a thorough trial, than any other hive known.

"Some two or three hundred of these hives have been in use during two and three seasons past, in the counties of Licking and Muskingum, Ohio, and several the past season in New-York and Massachusetts, and have given far better satisfaction than anything of the kind heretofore known. And from the universal satisfaction it has given thus far, it is confidently believed that it will supercede all others, for convenience, utility, profit, and all practical purposes.

"The first premium has been awarded this hive for three years in succession, by the Licking County Agricultural Society,

where its merits are known. The first premium and a diploma, by the Ohio State Agricultural Society, at their second annual fair held at Columbus, September 1851. Also, at the Indiana and New-York State fairs in 1852."

Mr. Whittlesey, of Catskill, presented Isabella grapes in excellent preservation. They had been kept in cotton.

Amos Gore, of New Jersey, presented the Mammee apple, the sapota, and the pomegrante of Cuba, brought in good condition by Captain R. H. Tittle.

Judge Livingston presented a basket of his fine, sound, beautiful snow apple.

Mr. Turell presented some seeds of sun flower, raised by him from the very fine seed sent by Mr. Harold, Secretary of the Queen's County Agricultural Society, two or three years ago.

The same subject—The most economical method of fertilizing land.

The club adjourned to Tuesday next, at noon.

The Chairman requested members to bring grafts, seeds, plants, cuttings, &c., as the season is now at hand to use them.

H. Meigs, *Secretary.*

Tuesday, April 5, 1853.

Present—Hon. R. S. Livingston, Messrs. R. L. Pell, Prof. Mapes, Coleman, of Brooklyn, Geo. Dickey, General Chandler, Andrew Archbald, Judge Van Wyck, Solon Robinson, Capt. Holmes, Messrs. Lawton, of New Rochelle, Low, Scott, Youmans, Warrin, Judge Scoville, and others—fifty in all.

Hon. Robert S. Livingston in the Chair.

Henry Meigs, Secretary.

Prof. Mapes—The subject of the day has many branches, each one of sufficient importance to deserve thorough investigation—

one that will not so much excite an opinion as to settle forever some valuable fact in agriculture. Take, for instance, the ploughing, the mulching, or any other.

(The previous hour was partly used by reading the following papers, prepared by the Secretary.)

Rural Encyclopœdia, 1852—Edinburgh.

CUTTINGS.

Multitudes of plants may be propagated by their cuttings, when due attention is paid to the soil, temperature, moisture, age of cuttings, season of using it, and other circumstances, so that cuttings of all plants which form buds, probably may be propagated. The age at which a cutting of any one species will strike best, if at all, is matter of experiment. The proper age, &c., of any untried species may also be estimated from the most analogous (or similar) species, and so accurately that some experimental gardeners propagate from cuttings of newly discovered and delicate plants almost as successfully as from cuttings of the indigenous and coarse plants. It should have at least two buds, one to make the roots and the other air plant. All the buds but one on a cutting ought to be under ground. When a cutting is hard to strike root, cover it with a bell glass, which will keep the moisture in. When it is eminently difficult to take, let it be put in pure silex, technically called *silver sand*. In many instances an entire leaf, or a part of one, is left on the upper end of the cutting, in order that it may elaborate the ascending sap, and thus perform, from the outset, some of the functions of the perfect plant.

Cuttings of many herbaceous plants may be struck as well as woody ones. Cuttings of balsams strike freely in water—melons also; the lower end immersed an inch or two in the water in white glass phials with $\frac{3}{4}$ inch mouths. Put the phials in a warm bed of tan, leaves or other calorific material, kept at about 70° of Fahrenheit. Nothing whatever should be put into the water.—As soon as the roots are formed the plant should be set in its place in the soil. Some of the plants strike in three days, especially in heath mould.

These cuttings form perfect balls of roots in a week. Gloxinia, heliotrope, aloysia, gardenia, melastoma, thunbergia, salvia, erythrina, gesneria, turneria, and many other greenhouse plants, all strike readily in the water. Cuttings of dahlia have succeeded—probably many others will succeed.

When cuttings are put into soil you cannot see the growth, and wait a long time in vain—sometimes for months; but in the way we mention you see every day's progress, When they succeed, they never droop, but grow steadily on to complete developement.

The Secretary regretted that he had not this delightful knowledge fifty years ago.

BONE DUST.

Turnips and barley on bone dust and farm yard manure—

value of the crop	£5 18 1½
On guano	£5 17 9½
Bone dust only	£6 4 11
On bone dust with diluted sulphuric acid	£7 15 1½

This experiment was tried on worn out sandy land.

Bone manure is by no means equally suitable to all kinds of soil; but confers superlative advantage on one, medium on another, and little or none on another. The experiments recorded by Mr. Sinclair—reported to the Highland Society, show that on silicious soil it was eminently fertilizing for turnips and the subsequent crops in rotation; that it produced scarcely any sensible effect on calcareous, stony soil, while on this barn yard manure was eminently fertilizing. Upon very thin, sandy soil, the value of bone manure is not to be estimated. It is not only found to benefit the particular crop to which it is applied, but extends through the succeeding crops. On the light sandy soil about Babworth the crops were comparatively poor under ordinary farming, but bones have caused it to become productive. The value of bone manure is found to continue six years on pasture,

four on mown grass land, four on arable land; in some soils longer—as ten years upon pasture. The fertilizing power of bone has been distictly seen after fifteen years, and in one case, where wasted land had been reclaimed by bone manure, the good effect existed upwards of fifty years. The principal element in bone which acts as manure is phosphate of lime. This salt is scarce in soils, sparingly dispersed, speedily exhausted, and yet is indispensable to the vigorous growth of nearly all the cultivated plants, and forms the principal stimulant to the vitality of several.

Bone manure was used long ago in Germany by the hot house gardeners. It became slowly known as a fertilizer, in England. Mr. Shier says (in 1844), that bone dust was imported into Aberdeen (Scotland,) in 1846, more than 4000 tons, and over 3000 tons average for six years. The best bone dust weighs 54 pounds a bushel.

In 1823, the value of bone imported into England was about $75,000. In 1837 it amounted to $1,270,000, since which it has greatly increased.

Intelligent farmers, in every age, have known something of the value of bone manure, but the moderns are rapidly, both by theory and practice, making this and all manures a matter of science, far exceeding that of all former ages and all countries.

Hon. Richard Bacon, of Simsbury, Conn. —A letter from him to the secretary was read. He sends for the use of the club, a bundle of grafts from his apple, the Connecticut beauty; keeps better than the average of winter apples.

He is pleased with the observations of Mr. Pell, relative to the utility of pulverized rocks, as new amendments to soils, and that the decomposed red shale (a crumbling kind of slate) would be a good fertilizer of sand land. The experiment is worth trying as well as other rocks—say the toad stone, (a sort of Basaltic rock), if they are to be hauled only a moderate distance. He suggests that the Institute should offer premiums for experiments of this sort, to be fairly made and repeated; among others for covering the ground for longer and shorter periods, in any easy and practicable way. Try clover—plough under one half when green,

the other half to let the clover lie on it; other experiments also. A distinguished premium for him who shall re-instate or materially improve worn out lands, with the least outlay of money; or methods, which farmers can adopt, without money. I have supposed that there is in every country, if rightly managed and applied, something that will serve as manure. The adage among miners is, that where there is ore, there is something near by to flux it with. I wish that I could be with the club.

The secretary said—The Rural Cyclopædia or General Dictionary of Agriculture, and of the arts, sciences, instruments and practice, necessary to the farmer, stock farmer, gardener, &c., &c.; four volumes, royal octavo, 1000 pages each, double columns, large number of good drawings, edited by the Rev. John M. Wilson, Edinburgh, 1852.

This very useful work has been added to the Library of the American Institute, by the Library Committee, within a few days past. From the examination which we have been able to give it, it is well done. It is posted up to the latest dates in all matters, which often marks the Scotch—research, perseverance, talent and industry. As a book of reference, it should have a place in every farmer's library. We, however, ought always to allow for the differences of climates, when we undertake to work out some of its lessons under our hot sun.

Judge Van Wyck—This question of manures embraces a wide field; it would take a dozen sittings of the club to do half of the important points contained in it, anything like justice. On this ground I shall only notice at this time two or three, which seem to attract most notice and interest. Our farmers, when anything new is introduced, which makes any material change in their system, and especially when it relates to manures, want all the light on the subject that can be given them; no matter whether this light originates in foreign countries, or at home. They constitute too large and useful a portion of our community, not to claim and receive this attention. All public bodies, and especially those which were organized for this purpose, are doubly bound to furnish this light in the best of their ability. In the case of the special or artificial manures, superphosphate of lime and guano,

they are new to our farmers, generally, compared with what they are to the farmers of Europe, and particularly to Great Britain. The latter has been in the habit of using phosphate of lime in all its modifications, for more than twenty years, and has, no doubt, received great benefit of it. Certainly then, it is not only right, but our duty to avail ourselves of her experience, and if there is a way in using this important article, better than another, to adopt it, and if there is one kind of soil it is better adapted to than another, or one kind on which it has no effect at all, or very little, they ought to know which it is. If there is any hazard in the use of this, or any other artificial manure, no matter from what source danger arises, which would make it not only useless, but a considerable damage to them, it is equally our duty to communicate all the information we possess on the subject.

In one of the late English agricultural periodicals, a farmer of great reputation, thirty years extensive practice, among other products of the farm which he cultivated was, the different varieties of the beet. He had used farm-yard manure, and in addition, many of the special, such as super-phosphate of lime, sulphate of ammonia, pearl ash, &c. For several years his beets had not done well; they were unhealthy, leaves looked sickly, bulbs were deformed and misshapen, quantity considerably less. He determined on trying a new manure of his own, and that was the leaves of the beet, cut and spread on the ground in the fall and ploughed in, and let them lay and decompose and the next year after preparing his ground well, plant his beets on it. He did so, and had a fine crop, and by pursuing this system has had, ever since; and his last crop (1851) was better than usual; Mangold Wurtzel, 39 tons, 13 cwt., and the rest in proportion. This was all from his own reasoning and experience; he had observed the best leaf was a large one; thick, and its sap vessels large, and that it must absorb much atmospheric nutriment, which it must impart to the bulb, and that it must contain all the constituencies of the last. This was the way, he argued, our forests grew; he thought they sustained themselves chiefly on their leaves—very little other manure. Another gentleman, in the last London Farmer's Magazine for March, gives a statement of his last crop of

turnips, and the different special manures he used to obtain them. Superphosphate of lime gave 16 tons, 8 cwt.; prepared bones, 20 tons, 4 cwt.; nitro-phosphate, 19 tons, 13 cwt.; Peruvian guano, 16 tons, 3 cwt.; the last the lowest, and prepared bones the highest. This was a gentleman well known, and stood high as a farmer. He had recently taken the highest prize for the best cultivated farm within 25 miles around Doncaster. His manures were good; he did not suspect them; he was able to pay the first price, and get them from people of credit. From an article just read by our secretary, extracted from a new work published last year in Scotland, and containing the latest and best information on agriculture, it will be seen that superphosphate of lime has no effect on some soils, on others a moderate effect, and on both these barn-yard manure is eminently beneficial.

In a late lecture, delivered a few months ago by Professor Anderson, chemist of the Scotch Agricultural Society on the adulteration of manures, he says the vile practice is still continued in Great Britain. From being more closely watched than formerly, the guilty are more artful, and make use of articles that are less easily detected, except by professional men. They used to employ the commonest sand on the banks of the Thames and elsewhere, to mix with guano; such as were unlike in color and texture—such as a farmer of little experience and penetration would tell at once was not pure, or at any rate very suspicious. Now the expert rogues study both color and texture, and are enabled by this and other manœuvering which practice has taught them, to defraud nearly or quite as many as ever. Professor Anderson states that guano and superphosphate of lime are those most adulterated, as they are most in demand. There are several kinds of guano which come from South America; the Peruvian is the best; the Chilian and Saldanha bay are inferior; besides, these often come adulterated from the place of exportation. The Professor states that he has often analyzed guano from Chili, Patagonia, &c., with from 30 to 60 per cent of sand mixed with it, and he was confident this was not done after its arrival in England. Guano has not the beneficial effect in Great Britain that it has in Peru;

the climate is much cooler and moister naturally in the former country than the latter; vegetation does not come forward so rapidly; it is delayed, and is altogether tamer in its action. In Peru they have every facility of irrigation by numerous streams from the neighboring mountains. These can be conveyed on so as to flood their lands, or in ever such small quantities, and with their hot sun and sandy soil it is every thing to their crops, as well as the effect guano has on them. Instead of Indian corn being four or five months in growing and maturing, it is only two or three; hence all the force of the manure is spent equally on the stalks, leaves, and fruit; none, or very little lost.

In Great Britain and here it is different. Before the grains or grasses reach maturity, the guano is generally exhausted, either by evaporation or improperly applying it, and various other causes. The principal one in England is the delay from their cool climate before vegetation starts, and the longer time before it reaches maturity. Good farm-yard manure here has the advantage of it. It is slower in taking hold, but continues to the last, and makes better fruit; it has been proved to have this effect in Great Britain, by repeated and fair trials. Our country is something similar, only we have an additional evil to contend with—the great droughts we often have, without its being in our power to mitigate these by water or irrigation, and guano must have moisture as well as the plant heat, to bring it forward that they may act in unison, or from its volatile character it flies off soon, and is lost. It will not wait long in the ground for the plant or the weather. A highly intelligent and practical farmer told me at the last meeting of our club, that he did not believe guano would suit our soil and climate; that he had not experimented much with it himself, but he had talked with those who had tried it more than once or twice, and their opinions coincided. As to the adulteration of guano, or any other artificial manure, I have not said, nor did I mean to say, that there any adulterations going on here, because I did not know the fact; but it has been stated here to-day, and by one engaged in lauding to the skies these special manures, that he knew of cases where one vessel had gone from here with it to Philadelphia, and two more for the

South. This is an important fact, as it shows that the abominable practice has begun with us, and how long since it is impossible to say, but it exists among us, and that is enough. Those engaged in it don't do it for sport, but they make it to sell, and they make money by it. To sell to whom? To the honest, industrious, hard-working farmer—another hazard he has to encounter among the many we have enumerated in the purchase of special or artificial manures, and particularly guano.

Prof. Mapes moved that speakers be limited to fifteen minutes, unless leave be given. Carried.

Solon Robinson—Prof. Mapes has fully exposed the beet top manuring adverted to by the Judge. In fact, so far as the science of the thing goes, one might as well bury a horse to raise colts, or corn, stalk and all, to raise corn! If the beet-top plan will succeed in England, it won't do here. What would his beet leaves come to without the suitable addition of lime? Why, sir, in England, you know, they sometimes put on their lands lime at the enormous rate of four hundred bushels. Everything there is so very different—climate, soil, moisture, and almost everything else, from ours. Our long, burning summer, and clear skies, take very few teachings from the everlasting weeping of English skies. In truth, Mr. Chairman, what is agricultural orthodoxy in England is very heterodox in America.

This club can have properly but one object, and that is, that members may meet to communicate beneficial knowledge to each other. If one member knows more of any good thing than another, let him tell it: that's what we meet for. I say, sir, that we must attend to our own American agriculture.

We persevere in teaching the benefits of guano and the improved superphosphate of lime, because hundreds of successful results come to us, without one solitary failure. At the last meeting, a couple of farmers full of doubts about it were fully converted by the overwhelming evidence before them. Prof. Mapes has no profit to make by talking of this article here, for he is so far from needing the endorsement of this, or any other club, that he already is unable to supply the present demands on

him by four thousand bags. And at this moment you cannot buy in this city fifty tons of guano!

Would you try the dung of cattle? You can't have cattle enough to do it, because you must sell them for money, and away go the phosphate of their bones and the rest—all forever lost to your land. You can't have those elements of fertility which you have sent away, from your neighbors, for they have been as wise as you have: they have cleared out their portion too. What you take out of the land you must put in again, or something equivalent, which can now be done. The doubts suggested of the adulteration of guano do not reach that large amount disposed of here by the agent of Peru, than whom a more honorable, upright man does not exist. He would cut off his right hand rather than do a wrong action. Sir, the guano bought of him is in the original packages, unadulterated; we are assured that perfect integrity exists in that great branch of the guano trade. It is a shame that it is true that some fraudulent cargoes have gone to Philadelphia and elsewhere, adulterated with old plaster and other stuff. That is a very rare case in this country, however many cases are in England. It is not true that land ever was tired, (as it is said,) where it is supplied with good manures. And too much guano may be put on land. When 400 pounds will do all possible good, 1,000 pounds would spoil the crop, perhaps. Of course we must first find out what the right quantity is.

Mr. Youmans asked Prof. Mapes what doctrine in reference to agricultural chemical analysis was broached at the late meeting of the National Agricultural Society at Washington, by Prof. Booth.

Prof. Mapes—A paper on that subject was presented from the Pennsylvania Agricultural Society, and on being read I found it necessary to find fault with it, and offered to argue the points before any competent assembly. The Professor argued the inaccuracy of agricultural chemical analyses, because he had discovered a balance of such extreme nicety that it would determine weight to the one thousandth part of a grain; and, therefore, the analyses of soils could not be confided in, since that minute exactness cannot be used in the process—forgetting that so far from extreme

precision being necessary, that *no two grains of wheat*, or of any other vegetable, could be found to contain precisely *the same amount* of their constituents. Therefore, Professor Booth was doubtless in error. That paper was not presented by the learned Professor, and was withdrawn from the National Society by the representative of the Pennsylvania Society.

The same subject, "The most economical method of fertilizing soil," ordered to be continued; and, on motion of Prof. Mapes, a particular branch of it, viz. the mechanical condition of soil.

Prof. Mapes—It has been urged to-day, that the burying the beet leaf would prove entirely adequate to insure a continuance of the beet for any number of successive years; that the leaf contains all the necessary inorganic food for the making of another crop of beets. This is but a badly arranged synopsis of an article which appeared in the London Farmers' Magazine, which article has been ridiculed by the whole agricultural press of England, but which fact has doubtless escaped the notice of the gentleman who has addressed us. The Leeds Messenger and many other papers have exposed the fallacy of the whole rationale of the article we have referred to. As the principles advanced to-day, may be taken as an example of adage farming, I beg to embrace this opportunity of making war on such adages which have been handed down from generation to generation, perpetuating and duplicating their falsities long after the advancement of science has arrived at causes, settling disputed effects, and exposing those empiric errors.

The day has gone by, Mr. Chairman, when farmers are longer willing to follow dogmas not accompanied by cause as well as effect. Practical farmers now know that soils deficient of any one of the constituents of the intended crop, must be supplied with it before that crop can be profitably grown, and wherever success is attained by the use of manures apparently deficient of every one of the constituents of the crop, it can arise from no other cause than the development of their constituents from chemical changes in the soil, or from mechanical abrasion of its particles, liberating such missing part from the silicious portions of the soil.

The long trumpeted adage of sandy soils for certain crops, and heavy soils for others, is known to apply only to the sparse mode of agriculture, where minimum crops, produced by minimum labor, and little or no manure, satisfies a slothful laborer who has not energy enough to become a practical farmer. Let those who doubt this, visit the market gardens around the large cities. Some of them are clay, some of them are sandy soils, some are composed of the red kellis hard pan soils of New Jersey, and still so primitive as to be composed in part of flat plates as large as the new three cent coinage.

But these market gardeners have long since discovered that for profitable culture, their soil must contain the constituents of all classes of plants; and hence, however empirical their practice, their soil embraces, although, perhaps, at an extraordinary and unnecessary cost, all the constitutents which may be required for plants, some of these constituents in non-sensical excess, but all in sufficient quantity. Let those who believe particular crops will not grow, except in a strong clay loam, visit the sandy gardens, and try them there. Let all those who think that sand is necessary for the growth of any particular crop, find the crop that an Aharsimus gardener cannot raise, in its greatest perfection, despite his aluminous soil and absence of excess of sand. In other words, plants are not made from sand or clay, but they are made from the small percentage of inorganic constituents held by the soil beyond their silex and alumina. And these combined with the organic matter, received from the atmosphere, assisted by ammonia condensed in, or artificially applied to the soil, form our crops.— And if the soil does not contain *all* these inorganic constituents, they must be added, or profitable culture cannot be pursued.

But, Mr. Chairman, let us return to the beet hypothesis, and let us suppose, each beet and its top to contain ten grains of solid inorganic matter, $7\frac{1}{2}$ of which may be found resident in the beet, and $2\frac{1}{2}$ in the top. Now suppose the roots to be removed or sold, the tops to be reburied in the soil, the whole amount taken from the soil by the crop was *ten*, the amount restored $2\frac{1}{2}$, and the amount parted with, and irrecoverably lost to the soil, $7\frac{1}{2}$. Still we are told by the speaker who preceded me, that under the

adage of *Similia Similibus*, that these tops will restore all the constituents which may be needed for a successive crop; this is indeed a style of arithmetic entirely novel, and on the fashionable plan of guaranteeing effects with an entire absence of cause. It is such adages and such practices as these that have caused our young men to go west in search of lands not worn out.

Let us now examine, Mr. Chairman, on what sort of land twenty successive crops of beets *might* be raised by the burying of the tops alone, and without the addition of these manures. We have only to suppose in a soil, the upper portion of which, to the depth usually percolated by beets, there may be resident so large a portion of inorganic matter as to represent the necessities of 20 or more crops of beets; and if in such a soil we should bury beet tops, we should thereby supply to the soil such portions of these tops as were solidified from the atmosphere, and thus supply the organic matter accessory to this suicidal robbing of the soil of its inorganic constituents. At the end of the 20 years, a grower, pursuing such practice would have rendered his soil nearly valueless. Had he sold or fed these beet tops, he could have soil with the necessary amount of organic matter from cheaper sources, and have added the necessary inorganic matter, removed by the current crops. Let us have no such vallies as those of the Mohawk and Genesee, robbed of half their value by the adage. Inorganic amendments cannot come from the atmosphere, nor can they be fully kept up by the ploughing in of portions of crops raised without foreign additions. Certain facts, Mr. Chairman, are ascertained beyond a question, and the farmer should commence his rationale with these facts, and not go behind them, in the exercise of a stupid adage, long since curtailed by experience in its application and fact.

The club then received grafts of Fall Pear, James River seedling Apple, Lancaster and Virgalieu Pears and Rambo Apple, from Mr. Coleman, of Brooklyn who brings them from his farm near Frederick City, Monoacy, Maryland; 300 acres, of which 150 are under cultivation. From Gen. Chandler, cuttings of the True Basket Willow, the *Salix Viminalis;* from R. L. Pell, of Pelham, grafts from his well known Fall Pippin; from R. T. Under-

hill, M. D., of Croton point, very fine cuttings of his Isabella and Catawba Grapes; from Hon. Richard Bacon, of Simsbury, Connecticut, grafts from one of his seedling Apples, the Connecticut Beauty; from Charles Turell, of New-York, seeds of an excellent West India Squash, raised here by him; specimens of handsome pearly pop corn and other small corn of same species; an ear of deep red corn, seeds of Egyptian Millet or corn, and flesh colored corn.

The club was requested, by the Chairman, to bring for exchange, seeds, grafts, cuttings, &c.

Adjourned to Tuesday next, April 12th, at noon.

H. MEIGS, *Secretary.*

Tuesday, April 12, 1853.

Present—Hon. R. S. Livingston, Prof. Mapes, Prof. Davis, Dr. Enderlin, Dr. Antisell, Prof. Youmans, Messrs. Bowman, Archbald, Geo. Dickey, Scott, Solon Robinson, Lawton, Gen. Chandler, J. W. Chambers, Brush, Horace Greeley, Alanson Nash, Coleman of Brooklyn, Swaine, Mott, Judge Van Wyck, Lowe—in all nearly forty.

Hon. Robert Livingston in the Chair.

Henry Meigs, Secretary.

The Secretary read the following papers prepared by him:

Annales de la Societe D'Horticulture de Paris, Dec. 1852. (Translation by Henry Meigs.)

MICHAUX.

"Andrew Michaux was born at Satory in the Royal Domain, situated in the Park of Versailles, on the 7th of March, 1746. At ten years of age he was sent to College, where he remained only four years, and returned to his father's house. He worked on his father's farm till he was thirty-one years of age. Then, having lost his adored wife, he yielded to that passion for travelling which he always had—and now wishing to be as far as possible from that spot on which he had sustained so great a calamity, he

resumed his studies, and acquired botanical knowledge; then went to Persia in 1782 with Rouseau, (a nephew of the Genevan philosopher,) who was Consul of France at Bagdad. He travelled through all that vast Empire (Persia) in three years, and reported its natural history, and brought home collections of specimens.

The French Government, desiring to enrich France with all the vegetables of North America, charged Michaux with that honorable mission. He left Paris in 1785 for the New World, where he remained twelve years, and from whence he sent to Paris an immense quantity of seeds, and more than sixty thousand young trees. In 1797 he returned to Paris, published drawings of American Chestnuts and the Flora Borealis Americana, [North American Flora.] He then formed part of the New Holland expedition under Captain Baudin, which left him at Madagascar. There he was attacked by the fever of the country, and from a second attack in 1804 he died."

The trees of North America were more accurately drawn by him than any we have seen. Capt. Robinson of Newburgh has lately presented a fine copy, with admirably colored engravings, to the American Institute Library. It is entitled the North American Sylva [or woods.]

From the same.

The Olive — French, Olivier; German, Oelbaum; Italian, Ulivo; Spanish, Olivo; Latin, Olea.

The genus consists of evergreens, and are called *oleinees.*

Beside the olive of Europe, there are many exotic kinds. Our olive is so important on account of its oil that it can hardly be dispensed with. It grows from twenty to twenty-five feet high, and often has two or three stems from one root. At the base of the stem, or rather the roots, a protuberance is formed often three feet in diameter and sometimes four inches thick. The leaves are green above and whitish below.

The tree has a great quantity of blossoms in April. They are of a yellowish white color.

The olives as they ripen take a dark or blackish, violet or reddish color. One variety only has its olives whitish. The olive does not ripen until after the middle of October, and many remain on the tree throughout the winter.

Duhamel says that the tree has an immense amount of roots, which are known to be preserved in the earth for centuries.

Downing, the celebrated Nurseryman of America, says that the olive is cultivated and is flourishing in South Carolina.

Aristeus of Athens was the first who cultivated the olive, and discovered the method of getting the oil from it. The Romans first introduced the olive into Europe, when they conquered the Greeks. In the reign of Tarquin it was unknown in Italy, Africa and Spain.

It is a delicate tree and requires particular pains and almost continual attention from the cultivator.

Solon Robinson—Some time ago I used to be one of the disputants in relation to chess, but since that time I have seen such remarkable instances, that I am at present as much staggered in my old notions as Lindley. I planted, 15 miles from any settlement, wheat, not for the purpose of obtaining a crop, but for the purpose of cultivation. Late in November, the sod was turned over, the wheat was sown, and it grew, but where there was one head of wheat, there were one hundred heads of chess. I have seen more than five hundred instances, similar to this, upon the prairie. Nothing but chess grew in those places where water stood. I knew of another instance, by a person who turned over the sod, late in the fall, similar to the manner in which I treated mine; he also sowed it 30 miles from any settlement, where nothing previously had been cultivated, and the product was all chess. In the case that I have cited, in relation to my experiment, chess could not have been carried to that place by cattle or birds, for the nearest cultivation was 60 or 70 miles distant. It was an entirely new country. I do not say that the wheat turns to chess, but rather want to know why it grew there, if the wheat did not produce it?

President—Don't you recollect of seeing chess in barley?

Solon Robinson:

I do not recollect to have ever seen it in barley. I think, I heard farmers say, that they had observed chess among wheat, all their lives; had no doubt as to wheat turning into chess; and used to call it a bastard or spurious wheat. Another instance, which would strengthen such an idea, is, that there is a resemblance between the grain of chess, and that of wheat; their kernels, also, bear a resemblance, so too do their stems. These occurrences often take place with plants of a similar nature, change from one to another. The grasses in the regions of wheat, probably change into wheat; and cultivation does a great deal, in bringing about these changes; manner of tilling and manuring, therefore, all these things have an influence on the article, which the cultivator has sown and wishes to produce. I only state what I have heard aged farmers say.

President—Don't you think chess resembles rye as much as wheat?

Solon Robinson—I hardly think it does. According to my impressions, it resembles wheat much more, and more often makes its appearance with wheat.

Prof. Mapes—This subject of chess I have not been positioned to examine fairly; but there is one hypothesis, which I think the members should take in view. It has been clearly established, that the nitrogenous portions of any plant, if buried deeply, seem to give rise to the growth of probably, previously pent up seeds, where they could not find their proper aliment; and new kinds thus caused to appear. May it not be possible, that in those places, where the ground is too wet, or from other circumstances, that the decay of certain substances, contained in wheat and other grains, should cause chess or any other plant to grow? May there not be farina fecundi of some form belonging to it? May we not suppose that the earth's surface, to a very great depth, may have distributed through it seeds of a variety of kinds, that will lie in the latent form until they meet with aliment, suited to their development; and thus may we not, with some crops, from seeds furnishing the necessary aliment, make the growth of one plant *sui generis* to another? I don't know, that there is any truth in

these remarks, but make them for the purpose of calling consideration to the subject.

Solon Robinson—I wish to make a suggestion, that the subject for the next meeting be decided upon, before the regular subject of the day shall have been dicussed, as it will have a tendency to prevent any misunderstanding that might arise on the part of the members. When left till the close of the meeting to be announced, owing to the confusion arising from the distribution of scions, seeds, &c., it does not reach the ears of all present.

Subject of the day:—

THE NECESSARY MECHANICAL CONDITION OF THE SOIL.

Prof. Mapes—As to the necessary mechanical condition of the soil, we are all aware that by the fall of rains, and perhaps from some other causes, the soil becomes compact. We know, also, that when the ultimate particles are not spherical in form, it takes much longer to compact them. Some soils contain clay, and in such cases a single rain will compact the surfaces. Thus, in Columbia county, you keep your plums free from the curculio because the clay washes between the pores of the surface, and gives a glass like covering; therefore the curculio cannot enter.

It seems to be necessary to plow the soil for the purpose of breaking up this compacting of it, and the advantages arising from the plowing are many, and well understood. It is well known that a soil will change its character by being exposed to the atmosphere, that carbonic acid and ammonia are more readily received, and that it becomes a store house to these substances for the use of plants. Plants, during their decay, deposit carbon in the soil. Atmospheric influences are necessary for the oxydation of materials in the soil.

There are certain substances in the soil that have the power of absorbing ammonia, and many other materials that may be brought in solution; thus clay (alumina) has the power of receiving and retaining ammonia, so, too, has carbon, which is restored to the soil by the decomposition of plants, and is received from the atmosphere in the form of carbonic acid gas.

When a soil is well disintegrated, so that air can circulate freely among its particles, a larger amount of moisture will become resident, for the reason that a larger amount of surface is exposed to the action of the air. A cold pitcher subjected to the influence of the sun, will soon become covered with drops of water, which is the moisture of the atmosphere condensed upon its surface. In case the soil be ploughed deep enough to cause thorough disintegration, the air, in passing through it, will cause moisture to be deposited through the mass, because it is at a lower temperature than the supernatant atmosphere, thus preventing crops from suffering from drought. There has yet been no instance of subsoiled lands suffering for want of moisture. If the crop sown be corn, and if the subsoil plough passes to a proper depth, traveling under the surface soil as a mole might pass along without turning it over, this crop will not suffer injury from dry weather, nor will any other crop. I saw the field of Mr. James Campbell of Weston every fifth row of corn in the field, was subsoiled, and the parts so treated were perfectly free from harm, while the other portions showed very much the want of such cultivation. There are many other instances of the advantage of subsoil ploughing, but too numerous to be here cited.

During the dryest days of summer, land treated as I have already mentioned, permits much air to enter, and as moisture condenses it, supplies ammonia to the growing plant, causing its roots to be thrown to greater distances.

The power of alumina and carbon is limited in the taking up of ammonia. If three barrels of sea sand one containing a few per cent of alumina, and the other of carbon, and the third sea sand alone, have the fluid drainage of the compost heap poured on top of them, in passing through the barrel containing the sand, it will carry with it all substances held in solution, while in passing through the other two, it will be robbed of many of these materials.

It has often been stated, and with truth, that very deep ploughing brings up too much subsoil, as it doubtless has a tendency to injure for the time being, but land may be ploughed with safety

one inch deeper each successive ploughing, until the proper depth be arrived at. Land should be under drained before subsoiling, or the rains of a single season will compact it. The placing of the subsoil on the surface, thus exposing it to the atmosphere, changes its character, and causes it to become surface soil. In digging the holes for many of the trees upon my farm, I had the surface soil placed at the roots of the trees, and the subsoil placed on top the surrounding soil, bringing it in more immediate contact with the atmosphere; these parts are now of even quality with the rest of the surface soil; and where the land was underdrained, and I went pretty fully into this subject, this change took place in a much shorter space of time.

This land never suffers from drought, and it is not possible that this arises from the amount of water in the drains. Wherever stagnant water passes away freely, air, in passing through, ensures a deposit of moisture. The amount of air passing through these drains at times, would be sufficient to extinguish a lighted candle, if placed at the upper end of one of them.

As to subsoil ploughs, many farmers have been deterred from using them on account of their bad configuration. Most of them have wings at their sides, requiring the earth to be elevated eight inches. You will perceive that in its onward motion, it elevates 100 pounds of soil in every foot of its forward travel.

This plough has been very much improved by the carrying down of the side wing. Messrs. Myers, Prouty and others have carried it down, making it but 1½ inch above the base of the plough, thus causing it to be more easily forced through the soil, the point having the advantage that a sharp chisel has over a dull one. But at the suggestion of some one, (I cannot now remember whom,) I conceived of a plough of superior construction, and proposed it to Ruggles, Nourse, Mason & Co. They have adopted the plan, and have recently sent me two of the ploughs. The construction is exceedingly simple, and will do away with the necessity for employing heavy teams for subsoil ploughing.

The Secretary read from the National Intelligencer of the 11th of April, 1853, the following article: "A very singular discovery

has lately been made in France by Mr. Fabre, a gardener of Ayde. The herb Ægilops, heretofore considered as worse than useless, grows abundantly on the shores of the Mediterranean. It produces a species of grain resembling wheat, in form, but much smaller. In the year 1839, Mr. Fabre sowed a quantity of this grain, and he found that the produce bore a close affinity to wheat. That produce he sowed the next year, and the yield was still more like wheat. He went on sowing the produce of each year —the succeeding year—until now he has succeeded in getting as fine a crop of wheat, and of as good quality as can be wished for. Thus he has proved that a wild and mischievous weed can be educated into excellent wheat. We find this in a foreign agricultural journal. Your readers must exercise their judgment as to the credit due to the statement."

The Secretary read from Lindley's Vegetable Kingdom, Ægilops, one of the *graminaceæ*, eleventh genus, *Hordeæ*—a barley. The word chess is not found in any English dictionary before Webster's. In Persian the word *chas* or *gas* signifies evil, depraved, and a useless weed. In New-England, that weed, which grows among wheat, is supposed to be wheat degenerated or changed, as it abounds most in fields where the wheat is winter killed. It bears some resemblance to oats. This fact is mentioned by Pliny in his Natural History, Lib. 18, Chap. 17. "*Prium omnium frumenti vitium avena est: et hordeum in eam degenerat.*"

This change of wheat and barley into oats, he ascribes to a moist soil, wet weather, bad seed, &c. This opinion of Pliny, coincides with observations, in America, as wheat is most liable to perish on moist lands, and often in such places all the wheat is killed and chess often appears instead of the wheat.

Solon Robinson—At the west, many miles from any settlement, to make out a Squatter's claim by producing crops, on new land which had never seen wheat, I sowed wheat, clean fine wheat on the turned up sod, and on a spot where water had stood—in fact on land where neither wheat nor chess had ever been. I had on the water field nothing but chess; on the other fields an hundred chess plants for one of wheat.

Judge Van Wyck said, as to chess in wheat, he thought where it was not among the wheat when sown, as foul seed, it was a degeneracy of the plant from bad tillage or deficient culture in some shape. He judged so from the great resemblance between the two, in stem, leaves and kernel.

Many plants are not only improved greatly by cultivation, but made almost entirely a different plant in size, flavor and nutriment. Why not a change to worthlessness from the opposite cause so as to change their very name? I have known it called in many parts of the country, by good farmers, bastard, or spurious wheat.

As to ploughing, or the mechanical preparation of the soil for seeds or plants, everybody at this day must advocate deep or subsoil ploughing. What we in America call subsoiling is twelve to fourteen inches, and deep ploughing from nine to ten; and it will be long before our farmers generally will be persuaded to go as deep as this. Many call from seven to nine inches deep ploughing. To the south, the almost universal practice has been to plough from three to five inches deep; and this, perhaps, from the first settlement of the country. Surface soil exhausted long ago, what riches must lie below this, undisturbed, never brought into use or action? Some farmers have gone south within a few years, and bought some of these old, worn out farms cheap, and with suitable ploughs and teams gone from eight to ten inches deep, and brought this rich substratum earth to the surface, and with proper tillage and stirring of it obtained good crops for two or three years, with very little manure. In Great Britain the subsoil ploughing of 18 or 20 inches, they go first with the surface plough, six or seven inches, drawn by two horses—the subsoil plough follows, strong and large, with a strong team of from four to six horses, and laborers in proportion, and go from 12 to 14 inches, as they see fit. The English calculate that their subsoil ploughing costs them nearly as much again as ordinary ploughing. In our country, where labor is so much higher, our subsoiling of 12 or 14 inches could not cost much less. There is another advantage attending subsoiling, either as we subsoil, or as the English. Where there is surplus water it drains it to a

certain extent, and carries it off. In Great Britain they often use subsoiling for this purpose, and especially those, and they are not a few, who cannot incur the great expense of underdraining.

Solon Robinson—I have never known chess to grow any where but among wheat. Before we finish our regular subject and while the members are here let us settle our next subject. *Underdraining* was adopted as a branch of the general one, the most economical method of fertilizing land.

Solon Robinson—I have seen a subsoil plough like one you describe, only it consisted of one half of it.

Horace Greeley—What is the necessity of annually deepening the furrow only about two inches? why not plough nine inches at once?

Prof. Mapes—You may in some instances go down nineteen with benefit. I have gone down, subsoil and all, full thirty inches with benefit; but on some lands it is better to deepen gradually, even by several ploughings in one year.

Solon Robinson—I have considered subsoiling good in all lands, but I find that there are exceptions. There is one in Virginia, where the subsoil is called pewtery. It is a cold, fine clay, which by wet soon settles down hard, and looks like melted pewter. Even there subsoiling helps for a season. If it was underdrained I think its fertility would last forever. Some subsoils are actually poisonous to crops—so that when you turn it up there will be no crop. The United States do not plough, on the average, *six inches deep!*

Prof. Mapes—No! it is not four inches.

Mr. Robinson—Put stakes in and you can tell what depth you have gone.

Prof. Mapes—Put down the stake—make a hole, fill it with white sand, then you see the depth of your ploughing.

Mr. Robinson—I have seen an hundred thousand acres in the United States, that were not ploughed *two inches deep!!* A mis-

erable shuffle plough not worth two cents, dragged by a mule not worth that money. Ninety-nine hundredths of the land between here and New Orleans are treated in this way.

Mr. Bowman—I own a farm in Virginia, and have seen much of the ploughing done there, and it was wretchedly shallow.

Mr. Robinson—Much of the land is a thin soil, on a cold sand. If this was gradually turned up until the ploughed depth shall be six inches, it would be greatly improved. Millions of bushels of wheat, or the soil that would bear it, is washed off and carried down our streams. Under-draining, sir, is opposed by many, little understood and less practiced. I should like to see that acre of land that would not be improved by it. Many farmers could afford to erect mills and machinery to raise water for the irrigation of them. In Georgia and other parts of the South, they import hay from the North. They have as beautiful lands for hay as need be; it wants nothing but the water, for want of which, and under a burning sun, their hay grass burns out.

Prof. Mapes—I rise to endorse Mr. Robinson's ideas on subsoiling, but in very wet lands, it is of no use whatever.

William Lawton, of New-Rochelle—I am very much pleased and enlightened by the remarks of Prof. Mapes on subsoiling. I now understand why I accidentally adopted draining and subsoiling, some dozen years ago. By draining and subsoiling, I supposed that I had well stirred up the soil, but still the benefit seemed to me to arise from some peculiar properties in the soil of my field, for it yielded seventy bushels of the most perfect corn (shelled) per acre—corn so fine as to bring me an extra price as seed corn, from the best judges here. I manured in the usual way, and in a parched season, when others' crops suffered, mine were not injured. My potatoes, also, did as well in the parched season as the corn did. I had been taking in a little book knowledge, and such was the result of my application of it.

I believe in 8-inch ploughing, notwithstanding some subsoil may be turned up. I do insist on ploughing a greater depth than our good folks have believed in, or practiced. By powerful

preaching to them, they may go down four and a half inches, but next year they will do less.

Prof. Mapes—In some places on my farm, I have ploughed fifteen inches deep, subsoiled fifteen inches under that, and made drains under all that. The great advantages of all this are, the preservation for the plants of the requisite moisture, and more especially the easy and free admission into the soil of atmospheric air.

Horace Greeley—I recollect the farming of my father, well. He used four yoke of oxen and a horse in ploughing his land, and he went down ten inches. I fear that ten years hence our people will not subsoil, and that when you say plough eight, they will go six inches.

Prof. Mapes—I know, however, a large number of farmers who now plough twelve inches deep.

The subject for the next meeting is Underdraining.

Thaddeus Sellick presented a potato, brought by a sailor from Porto Rico. It resembles in figure our sweet potato, weighs five pounds and a half, and is quite white. On being baked, it was so well done, that like the fish cooked for the Roman Emperor Heliogabalus, it seemed as if it had never been cooked. The members tasted of it and gave it high approbation. It was not so sweet as our sweet potato, but more agreeable to the taste, very white and mealy.

Our great country has every climate and soil. Let some one introduce this noble vegetable to general cultivation in the proper regions.

J. W. Hunter, of Brooklyn, presented grafts from his Duchesse d'Angouleme pears.

Dr. E. F. Olds, of Michigan, presented a box of dark-skinned, smooth, heavy potatoes, raised by E. C. Roberts, of Michigan. He claims to have found a remedy for the far-famed malady of this admirable food.

Cuttings of basket willow, and lettuce seeds of a large and very tender-headed lettuce, were presented by Mr. Coleman, from his farm in Maryland. It having fine qualities and no name, we call it Coleman Lettuce.

Solomon D. Crispell, Esq., of Hurley, in Ulster county, New-York, presented Merino potatoes.

From the Reverend Chauncey E. Goodrich, of Utica.

Utica, April 5, 1853.

Mr. Tallmadge—Sir: I herewith send you, in behalf of the Farmers' Club, the following varieties of potatoes:

1. The Rough Purple Chili, one eighth of a bushel. Cut the large ones; give plenty of room. I recommend some portion of them to be tried in a well drained swamp muck soil. Plant early, as they need the whole season. In very rich soil they often grow in clusters.

2. I send you sorts. The skin of these varieties is usually more or less red. Some of them are white flesh, and a few slightly yellow. Probably all of them will be eatable this year. Not quite so hardy as No. 1, above.

3. Seedlings of 1852, one-third bushels. Here are four families; and as many sorts as there are individual tubers in each, though many of them, to the eye, look exactly alike. The most of them will be eatable next fall, others the year after. All will gradually improve in table quality. These four families are remarkable, as a whole, for yield, hardiness, and fine white flesh. The flavor of them cannot be known until next fall.

The four families more particularly described.

1. Seedlings derived from those of 1849. These run very large, have usually light skins, often tinged with a little red; many look much alike. This is a large family. Mark, (1)—52. 8½ lbs.

2. Seedlings of Rough Purple Chili. Generally dark skinned, not quite so fine in shape as No. 1, nor so large; and yet, all things considered, they are probably the most valuable of all.—About half as large a family as 1. Mark, (2)—52. 6½ lbs.

3. Yam Seedlings. Good size; generally dark skinned. A small family. Mark, (3)—52.3.

4. Good size; all white skinned. A small family. Mark. (4) —52.

N. B.—Plant these four families separate. Give all plenty of room. Should any one hill, in the fall, displease you, reject it. They have been selected with great care, yet all may not do equally well this year. Mark those that ripen early as being, on some accounts, important. Dig each hill separate in the fall. Then if you have more first rate sorts than you want for yourself, sell them to your neighbors.

Please to report to me next October, the health, yield, and prospects of these different sorts of potatoes.

CHAUNCEY E. GOODRICH.

Rev. Dr. Goodrich's Directions as to Seedling Potatoes, April, 1853.

In planting these seedlings of 1852, please do not cut them; they are too young. Do not *pet* them, but give them *fair culture* by the side of the old sorts.

Try the flesh with a penknife, as you see I have done. Should the present year exhibit disease, some of these seedlings will fail. Who ever saw a large litter of pigs without a *teat-man?* In cooking some of them in the fall, do not use a whole hill, since then you will lose it, however good. I hope some intelligent person will cultivate them with his own hand, or at the *very least* under his own eye. The selected varieties of my seedlings of 1852 embraced in the four families in this hill, are about 1,547, of which I have sent to you 100 or more, selected at a venture, except that some half dozen were excluded as too yellow in flesh.

The potatoes were then distributed to the following members, on the undertaking to return to the Club ten per cent of their produce, for distribution in the spring of 1854, viz:

Hiram Nash, Williamsburgh, Mass.	Nos. 1 and 2
S. R. Wells, New-York	1
Horace Greely "	2
Henry Whittlesey, Sing Sing	2
A. O. Butler, New-York	3

Professor Youmans, New-York	3
Professor Mapes, Newark, N. J.................	3
Hon. R. S. Livingston, Barrytown, N. Y........	3
S. Coles Mott, New-York....................	3
James Swaine, Sing Sing......	3
W. K. Gaston, New-Brunswick, N. J...........	3
R. L. Pell, of Pelham, Ulster Co., N. Y........	1 and 3

The rule that no member shall speak more than fifteen minutes, without leave, is established.

The *Chairman* requested members to bring seeds, cuttings, plants and grafts at every meeting for exchange and contribution.

Mr. Coleman, of Brooklyn, exhibited to the members a model fence made by machinery, with a range of bee hives attached to it. The model is beautifully constructed; has the outer front even with the fence, and the inner front of the hives projecting into the field on the necessary thickness to contain the hives. Thus, on the northerly side of the fields of clover, buckwheat, &c., the bees have their villa handy—readily reached by them. Doors shut up the outer front entirely. As many hives may thus be set as the farmer deems necessary. This model contains space for twenty-four separate hives.

Mr. Sellick states that Cranberry plants may be obtained from Mr. Downing, of Brick-Township, Ocean county, New-Jersey, 24 miles from Red Bank Landing. His crop last year brought him $1500. There are other Cranberry growers thereabouts.

The subject for the next meeting, "The most economical method of fertilizing land," and especially for that day, *Under-draining.*

The Club then adjourned to April 19, at noon.

H. MEIGS, *Secretary.*

Tuesday, April 19, 1853.

Present—Hon. James Tallmadge, Judge Livingston, Hon. Richard Bacon, of Simsbury, Conn., Dr. Olds, of Michigan, Prof. Mapes, Dr. Underhill, of Croton Point, Prof. Youmans, Blakeslee, of Watertown, Conn., Lowe, Geo. Dickey, Gen. Chandler, Fleet, Bowman, Alanson Nash, Coleman, of Brooklyn, Schenck, of New-Jersey, Fellows, Judge Scoville, Solon Robinson, Scott, Judge Van Wyck, and others—upwards of forty in all.

Hon. Robert S. Livingston in the chair.

Henry Meigs, Secretary.

The chairman announced the subject of the day to be under-draining.

Dr. Olds, of Michigan, exhibited very fine potatoes raised by a poor man of the name of E. C. Roberts, of Michigan, who had been trying many experiments for several years past, to avoid the potato disease. That he had been successful in the discovery of a remedy, and had printed a small pamphlet on the subject, for sale, about a year ago. Poor Roberts was now sickly as well as poor, and was now seeking some compensation for his discovery. That he (Dr. Olds) appears here on behalf of Roberts. That those farmers who have followed the instructions have raised crops as good as his: that is, luxuriant vines, flowers, seed balls, and very solid fine potatoes. That Roberts says he only followed a law of nature as regards the management of the potato. Dr. Olds requested the club to appoint a committee to examine and report on Mr. Roberts' plan.

Mr. Chairman and gentlemen of the club—Mr. Roberts made his discovery seven years ago, and has been testing it in various ways ever since. Last year he committed his experience, and consequent results, to paper, in the form of an essay, and secured the copyright. He has recently published it, and is now endeavoring to distribute it throughout the country, so that all can participate in its benefits,

But Mr. Roberts and his friends, although they feel the utmost confidence that as soon as the plan is universally adopted the

days of the potato rot will be numbered, are desirous of obtaining your sanction and co-operation, before they make any decided effort for its distribution. They are acquainted with your high reputation. They know that among the members of your club are many of the most scientific and distinguished agriculturists of the present age. They have from time to time perused the reports of your proceedings with the deepest interest. They have rejoiced in the independence and freedom with which agricultural principles have been here discussed. They have hailed with delight the united determination which you have manifested to do everything in your power to promote the welfare of the intelligent and practical farmer. Hence the reason why they felt assured that as soon as you became acquainted with the character of the enterprise they have undertaken, you would not only bid it God-speed, but would call upon your friends and neighbors to lend a helping hand in the propagation of its principles and in the remuneration of its discoverer.

Mr. Chairman and gentlemen—Mr. Roberts and his friends feel that to their direction is entrusted a discovery that is founded in truth, because it is based upon the immutable laws of nature, and therefore will stand the test of experience. They feel that upon its rapid adoption depend the interests and happiness of millions. They know the influence of your deliberations upon public opinion; and it is their confidence in your judgment and liberality, and in your desire to benefit the masses, that has induced them to send you an agent, with instructions to exhibit his potato, restored from absolute disease to perfect health and vigor, and to acquaint those of you who have made this subject more particularly your study with the process by which this has been done, so that you could express your opinion freely as to its truth or falsity.

They indulged the expectation that when you saw the potato, with its increased solidity and gravity, and understood Mr. Roberts' plan, you would be ready to admit its correctness; and the more you reflected upon the subject, the stronger would be your conviction that it was the only plan that could succeed. If you could not, in the present state of the public mind upon this sub-

ject, say this much, they felt that you would at least express the opinion that it looked the most reasonable and philosophical of any plan that had ever yet been presented to the public, and that it was therefore well worthy of the trial of every farmer.

As to the cause of the potato rot, Mr. Roberts discovered, after a few years' investigation, that the reason why it was produced by so many and trifling occurrences, must be in consequence of the enfeebled and delicate condition of the plant, or it would have surmounted all the obstacles that had ever yet presented themselves to its growth and maturity.

But the question here arose, whence came this sickliness of the potato, if some of its physiological laws had not been trampled upon?

He reflected, that, as in the human system, health depends upon the strict observance of the laws imparted to it at the beginning of its existence, so in the vegetable kingdom, the laws peculiar to each plant in its nativity, could not be transgressed at any period of its life, with impunity.

These thoughts led Mr. Roberts to examine more particularly into the origin, habits and history of the potato, so that he could familiarize himself with all the circumstances with which it was surrounded, during every day of its life, throughout the entire year.

By contrasting them with the way the potato has been managed throughout this country and Europe, and philosophising upon the difference, the difficulty to his mind soon became solved. He saw that some of nature's laws had been violated, and for this infraction of them, man has been visited with this severe retribution. To demonstrate more particularly the precise laws involved, and bring them out from where they had been so long hidden, and exhibit them clearly to the world, Mr. Roberts commenced a new series of experiments.

He took several varieties and planted them in different ways, and in different soils. One portion of every variety, in addition to the usual means, he doctored by administering from time to

time the numerous specifics, that are so abundantly before the public. Another portion he cultivated in the ordinary way. The other and last portion he managed in the way, as he thought, nature and nature's God had pointed out. He made sure, that the circumstances with which they were surrounded daily, should be the same as if they had been planted and nurtured in their native soil. In a word, he saw that no physical law was transgressed.

At the end of the first year, he found that the third portion yielded much more abundantly and looked much more healthy than either of the others. He repeated the process another year, observing the laws natural to the plant with the third lot, and adopting the process of the previous year with the other two. This year No. three grew luxuriantly, blossomed early, and in the fall the tops were considerably covered with potato balls, while the yield was still more abundant than the former year. The tops of Nos. 1 and 2 spindled up, about a foot high, with a sickly growth, and in the month of August became spotted and soon died, and when digging time came, the potatoes, like the Irishman's flea, were not there; they had nearly all rotted.

Mr. Roberts cultivated each portion another year, on the same plan, and found, at its expiration, the results the same in each instance, with this difference, that his improved potato yielded so abundantly, and exhibited such strong marks of restoration to health, as to afford the most indubitable evidence, that he had discovered an absolute and permanent cure for the malady, that has filled the world with such consternation and distress.

Last year, Nos. 1 and 2 were much better than they had been any other year, during these experiments. Indeed, the potato crop throughout the State, compared with former years, was quite tolerable; but the yield was very small, and in quality nothing to be compared with those of Mr. Roberts' production, or with those of our boyhood.

He accounted for this improvement in the general crop thus: The season was uncommonly dry throughout, and consequently the potato, although sickly, was not compelled to encounter the frequent vicissitudes of other seasons. The temperature and

moisture were uniform, &c., so that the potato was very much in the condition of a consumptive patient; in Florida or California, it not only survived, but somewhat improved. But let another such a season come as is common to this country, attended with all its unfavorable changes, and let the laws peculiar to the potato continue to be transgressed as they have for years past, and all this improvement will soon pass away, like images traced in the sand on the sea shore, which the next wave obliterates.

I would here mention that during the period of these experiments, Mr. Roberts furnished many of his neighbors with his improved potato, and directed that they should be planted by themselves in the same field, and cultivate them in the same way they did their own potatoes, and report to him the results. Some of them he instructed in his process, which they followed, and the results were the same as with Mr. Roberts. Indeed, gentlemen, there has not been a single failure. How, then, can it be possible that we are deceived? Was there ever any discovery established upon a better basis? But you doubt, and it is not to be wondered at. Neither is it at all strange that the public are at loggerheads upon this subject. There have been so many thousand cures proposed for their consideration and trial, and many are so much at variance with each other, and yet none of them absolutely effectual, that all is confusion and distrust. It was just so in Michigan when Mr. Roberts first mentioned to some of his neighbors his convictions upon the subject. They considered him half crazy, and often expressed the wish to each other that he would stay at home and attend to his own business, and not be hindering them and poking round in their potato hills for the rot. The general opinion was, that it was all nonsense to think of finding out a cure for this disease, and that it was a judgment sent upon us by our Maker for our manifold sins, and when he saw fit he would remove it, and not before. So prevalent was this feeling at first, that scarcely any could be induced to make a trial of his remedy. But a change has now come over the spirit of their dreams. Scarcely a farmer can now be found in that vicinity who doubts the entire efficacy of his remedy. They have tried it repeatedly, and therefore know its results.

There are two features in this enterprise to which some have objected. In the first place it has been thought that Mr. Roberts' book was too small, and not well enough dressed up. I think, myself, that it would have pleased better, had it been more expensive and handsomely covered. Nevertheless it contains all that is necessary; and as Mr. Roberts is a farmer, and wrote for farmers, he thought, probably, it would be best to get it in as small compass as possible.

Another feature is the selling of the book as a secret. Some do not like this; I do not like it; I had much rather he would have published his essay to the world, and depended upon voluntary contributions for his reward. But Mr. Roberts was peculiarly circumstanced, and took this course after mature deliberation. He and his friends felt that he was entitled to a liberal reward. He consulted many of the most eminent men in the State, and their uniform advice was to adopt the present method. Some of them had made important discoveries and published them to the world without any reserve, and after the government had saved to themselves millions of dollars by their use, not a solitary cent could be obtained in return.

He found that he could not avail himself of any of the rewards offered by national governments, or by States, because the reward was confined to their own citizens. He saw, therefore, no other way for him to proceed but to fix upon his book a price that would be below extortion and above meanness, and sell it to all who wished to make use of the discovery, and would not divulge it until he had been sufficiently remunerated for his toil.

The price of the book is one dollar. It will be left for sale at several places in this city, and agents have been sent to different parts of the Union for the purpose of securing simultaneous action throughout the States. I have brought with me a few specimens of Mr. Roberts' potatoes, restored to health, which I now present to the Club for inspection.

Solon Robinson offered the following resolution—

Resolved, That the Chairman appoint a Committee of three to examine the plan of Mr. Roberts for restoring the potato to

health and thereby prevent the potato rot; and that they report their opinion of his plan, to the present meeting.

Seconded and carried.

The *Chairman* appointed on the Committee, Messrs. Robinson, Prof. Mapes and Dr. Underhill—the latter declined serving.—He remarked that the potato disease has greatly subsided. We have not the twentieth part of it among us that we have had.—Some spots on the earth have been free during the whole prevalence of that disastrous malady. On my farm, where I applied a large amount of alluvial matter upon the free sandy loam, I have never had any of the disease at all. That alluvial contains copperas, or sulphate of iron, but whatever the reason may be, so was the fact.

Prof. Mapes.—The salt alluvials of Jersey, applied to farms have not prevented the disease.

Dr. Underhill.—My alluvial was of fresh water. I put five hundred bushels of it on two acres. But looking abroad, without knowing whence the destroyer came or whither he goeth, we find at every point that the disease wears away.

Mr. Bowman.—Is not the quality of the potato much deteriorated? There are none so good as they were forty years ago.

Dr. Underhill.—Now we find many as good as they ever were.

Judge Van Wyck.—Dr. Underhill stated generally that the potato rot had diminished much among us within the last 2 or 3 years, this is correct, but whether it has improved much in quantity, and quality and when not attacked by it, I very much doubt. Those within my circle of acquaintance, and that I have had an opportunity of inquiring of, have had about the same in quantity and quality, that they have had for the last four or five years, whenever they escaped disease, yielding from 200 to 300 bushels per acre. This was on upland soils of a good quality, well tilled, and without any regard to the kind of manure, consisting of barn yard, hog and the usual manures of the farm. It is to be hoped in time, that this diminution in the rot, will reach the quality of

the potato and also improve that, and that the causes of the disease, whatever they may be, will disappear as others of a similar character have done in the vegetable kingdom at different periods of the world.

Mr. Robinson urged the repetition of the Roberts' experiments, for assurance on a subject of such immense importance is deeply desirable.

Dr. Underhill.—Have the Roberts' experiments been tried on this side of the Alleghany mountains?

Chairman.—Not that we know—but they were tried where the malady was in full force.

Dr. Underhill.—We know not what may be the result of the Roberts' experiment in the saline atmosphere of the Atlantic States. If this Club has any weight with the people, it should be extremely careful not to lose it. We should put forth none but unquestionable facts, such as would convince, (as lawyers would say), 'any court and jury.'

Prof. Mapes.—The Committee has read Mr. Roberts' little book and considered its reasoning. Has the learned Dr. read it? We see the potatoes on the table, they are testimonials for Mr. Roberts—they are superior.

Dr. Underhill.—Can they be obtained for seed?

Dr. Olds.—Mr. Roberts has now none to spare.

Prof. Mapes.—The seed is not of so much importance as the plan is applicable to any other potato as well as the one on the table.

Solon Robinson.—Our learned and worthy friend Dr. Underhill, raises grapes from love of the human race. He prefers to give them the health creating grape, to giving them physic! I honor his philanthropy.

Mr. Bowman proposed to have the Roberts' Potatoes cooked, to be tasted at the next meeting of the club. We can then speak knowingly of their quality.

Mr. Blakeslee, of Watertown, Conn., said that on a field of his, two seasons ago, he gathered but eleven bushels of potatoes off an

acre, while last season his crop ran up to two or three hundred bushels. Last year he turned up the turf and applied barn-yard manure. I have come to the conclusion (said he) that the rot is going off.

Solon Robinson, from the Committee on the Roberts' potato case, offered the following

REPORT:

The Committee appointed to examine the plan of Mr. E. C. Roberts to prevent the potato rot,

Report, That the plan proposed has novelty, and bears indications of truth peculiar to itself. The hypothesis is of such character as to warrant the experiment under the hope of its doing away with the potato disease. We would recommend to members of the Club to try the directions of Mr. Roberts at the price asked, and repeat his experiments. The results exhibited are evidently of a greater specific gravity than other potatoes now generally grown, and exhibit other evidences of improved quality.

SOLON ROBINSON.
JAS. J. MAPES.

On the question being taken, the report of the committee was adopted.

Prof. Mapes—In reply to the remarks made by Dr. Underhill, all persons present are well aware that charcoal dust is conducive to the protection of the potato, and that many who have used this succeeded in saving their potatoes free from disease. Those farmers who have used muck, decomposed in the manner so often made known, have universally saved their potatoes, and I suppose that the reason is to be ascribed to the anti-septic property of the charcoal; that if decay commences, the charcoal absorbs the gases given off. Alluvial soil is much more highly charged with carbonaceous matter than other soils, and to this the potato may owe its sustenance. One man states that salt will preserve his potatoes, and another says that his potatoes had not been diseased until he used salt upon his land, and another man proposed ashes, which are, in turn, as was said of the salt, productive of disease.

Charccal seems to be the exception. I have heard of no instance of potatoes failing upon land charged with carbonaceous matter. Therefore, supposing charcoal to act so well, may we not attribute the success of potatoes on alluvial land to this cause?

UNDER-DRAINING.

Prof. Mapes—In relation to this subject of under-draining, we have already had every fact bearing upon it indirectly upon previous occasions, and therefore I will repeat its advantages as briefly as possible, so that I may soon get at the novel parts of the subject.

All persons present are aware that under-draining is not intended for getting rid of water in the soil alone, for its advantages are nearly as great on the hill top as in the valley. It has been used with great profit on land supposed to be dry, and particularly by its effects during drought, as well as on soils very wet. Soils that do not receive moisture, and retain enough from the atmosphere, are rendered sufficiently secure from drought by under-draining. The first advantage of under-draining to wet soil is, that the excess of moisture is got rid of, thus leaving the interstices previously occupied by the water open to the free circulation of the atmosphere. It is well known that atmospheric influences are beneficial to the soil, such as depositing carbonic acid gas and ammonia at the roots of plants, as well as that curious property of the atmosphere, when it really appears to be dry, of furnishing moisture. Every one of us has observed that a cold pitcher, if placed in the sunshine even on the hottest day of summer, will become covered with drops of water. The pitcher is said to sweat, but it is well known that it is the condensation of the watery vapor of the atmosphere on its surface. If a demijohn be exposed to the sun's heat in the month of July, and a thermometer passed into its neck, the mercury will rise to 130 degrees of heat; and then, if a cork be driven into the neck and sealed, and the demijohn be taken to a cold cellar, drops of water will be condensed upon the inside in one minute. If a bright saw blade be taken from an ice house and placed in the sunshine for a single minute, it will become covered with drops of water.

Now it is well known that water so abstracted has properties not to be found in some rain water. The first ten minutes' rain washes the atmosphere of much of its ammonia and other fertilizing gases; the next ten minutes' rain contains less of these gases, and after the rain of an hour, the water becomes comparatively valueless.

When a soil is under-drained, thus ridding it of an excess of water, when like a dry sponge its pores are open, admitting free circulation of the atmosphere, and is at a temperature of some degrees less than the supernatant atmosphere, moisture is deposited through the mass, and it is for this reason that crops upon land properly underdrained and subsoiled never suffer from drought.

I do not mean that because a man has purchased a subsoil plow, seldom using it, and has his underdrains improperly made, that, therefore, he has both of the necessary conditions; but in order to produce the desired result, the underdrains must be placed at the proper depth and distance apart, the subsoiling thorough, and if so, his crops never suffer from drought, but become comparatively independent of the seasons. Corn upon land thus treated never curls, nor do meadows run out, because the supply of ammonia, carbonic acid, moisture, &c., is continuous. What has been said of the condensation of water on the pitcher is equally true in relation to a deposit of moisture in dry soils. Thus it will be seen that such soils need underdraining as much as those that are wet.

Underdrains should not be made with one end open and the other shut. No engineer who understood his business would make such an underdrain. The water requires some slight fall in order to run, and with such slight difference, and both of the ends of the underdrains open. A lighted candle being placed at the upper end, it will be blown out, and for the same reason that it would be extinguished at the top of a chimney with a strong draught. Heat rises in direct lines, and this may be ascertained by holding your hand beside the blaze of a candle, and then directly over it. Air, in passing through the soil, gives up heat, and at the same time it supplies heat, it provides moisture.

Thoroughly underdrained land in my neighborhood is two weeks earlier than that not so treated.

Look at filled up old post holes in fields which bear a slight imitation to underdraining, permitting the atmosphere to circuculate to a certain extent, and you will see greener tufts of grass than in any other portions of the field; therefore, you may readily perceive that underdraining is not only applicacle to wet soils, but also to render them sufficiently humid for agricultural purposes. In many soils so prepared, the chemical changes go on as rapidly as is required by the plant. Silex can only be used by plants when in a soluble state, and by the admission of the atmosphere, potash frequently becomes liberated, which unites with the silex, forming silicate of potash. It will thus be seen that subsoiling is more beneficial than is generally admitted.

Solon Robinson—One very great advantage has been found in underdrained fields, and that is, the water flowing pure from the drains, comes out warm, and always ready for man or stock, in the coldest weather. Some find great benefit in underdraining dry lands. Col. Capron underdrains his dryest fields, and obtains abundance of pure water for his cattle. He thus saved all the former trouble of driving his stock to a distance to water. He also avails himself of these artificial springs for the benefit of his dairy.

Prof. Mapes—And by the simple and cheap means, the water ram, that water can be made to return for use to the highest ground on the farm.

Mr. Blakeslee asked Professor Mapes whether, if there was hard pan in his soil, he would drain under it?

Prof. Mapes—Yes; because after some time that hard pan will become decomposed and pulverulent—having had its surplus water let off by the underdraining.

Mr. Blakeslee—I have made drains eighty rods apart on one of my sloping fields, too wet for any use to me. My drains are from eighteen inches to three feet deep; pebbles, &c., form the bottoms, and flat stones laid over them. I have made nine hundred rods

of such underdrains on my land; it is now about eight years ago. As to the cost of them, it was moderate. I had eighty rods done for thirty dollars. I lead the water supplied by the drains through a leaden pipe to the watering place of my cattle. I find the drainage profitable. My crops doubled on the drained lands. The bitter blain grew there; I sowed Southern clover, and when the bitter blain is dead, and the clover eat off, what is mysterious, white clover and English grass take their places. I think that such drains are good, commonly at ten or twelve rods apart, and two feet deep. However, every farmer should carefully study out the condition of his own field, and drain accordingly. The pebbles in my drains, in some few cases, being undermined by water, come together; that must be fixed again.

Prof. Mapes chalked on a board the diagrams of his drains, and explained the action of them. The middle between two drains holds the water at his highest point in the land, while a gradual depression is seen from thence to each drain, so that the water-line between two drains forms a convex line, with the convexity above. He delineated also the draining tools which make drains three or four inches wide and five feet deep. Small bored pipes or drain tiles of one and a half to two inches bore are all that is necessary.

Gen. Tallmadge asked the Professor as to the action of the tile in receiving the water.

Prof. Mapes—In a properly made tile, the water percolates freely through the body of it; a glazed one would not do at all. You may readily demonstrate this by corking up tight the two ends of a proper drain-tile and immerse it in water; you will find it full of water very quickly. New modes of making tile without any burning are suggested, by means of a suitable rod for forming the bore of the tile, laid in the drain and suitably covered well with a proper cement, and as that is formed, the pole is drawn out of it horizontally, and the operation repeated. The cement or mixture must have some material in it which will soon decay, and thus leave the tube in a proper porous condition.

HARE'S NEW DWARF WRINKLED PEA.

A fine, large, delicious pea, presented to the Club by Amos Gore of New-Jersey; also, a prolific Lima bean from the same, were distributed among the members. The Secretary exhibited a specimen of the alfalfa, or Peruvian clover, over a foot high, grown from roots of which the seeds were sown here in 1851, have remained in the ground during the very severe winters of '51 and '52 and the last winter. The seed raised from it here last season were perfected. This plant comes from Peru, where neither rain, frost, or thunder and lightning have been known since the times of Cortez and Pizarro. The seed was brought from Peru, for Professor Mapes, who gave it to the club for distribution. This clover, in Peru, grows some five or six feet high, but they there cut it green as fast as it grows, for feed.

Judge Van Wyck proposed as part of the general subject of most economical fertilizers: The Comparative Merits of Guano and Phosphate of Lime.

The Club adjourned to Tuesday, April 26th, at noon.

The Chairman reminded members to bring seeds, cuttings, grafts, &c., for exchange and distribution.

HENRY MEIGS, *Secretary.*

Tuesday, April 26, 1853.

Present:—Dr. Austin Church, Captain Holmes, Hon. R. S. Livingston, Horace Greeley, Prof. Mapes, Messrs. Geo. Dickey, Griffing of New-Jersey, Solon Robinson, Denison, of Long Island, Bowman, Lawton of New Rochelle; Fellows, Hon. John B. Scott, and others—thirty members in all.

Hon. Robert Livingston in the chair

Henry Meigs, secretary.

The secretary quoted The London Farmers' Magazine, March, 1853.

LONDON FARMERS' CLUB, MARCH 7, 1853.

THE BEST AND MOST ECONOMICAL METHODS OF BREEDING AND KEEPING CART HORSES.

The mares for breeding must be most carefully selected as to quality, for no description of farming stock— whether cattle or sheep—were so sure to inherit from the mother the defects or the good points, as the horse. It was remarkable in a most extraordinary degree. A crooked leg, a bad shaped hock, or loin in the mare, was almost as certain to exhibit itself in the progeny, as for day to succeed night. We cannot too strongly impress upon the minds of breeders, the necessity of selecting right mares. The mare with foal should be invariably worked gently and carefully, to the last moment of foaling. Gentle, prudent exercise is conducive to the health of the mare. But after foaling, a very different course is required. She must not work, for it will hurt both, her and her foal.

What is the best horse? Why the large, hairy legged colts, which they bought at Reegby Fair. At 5 years old these fetched sixty guineas, whereas the Suffolk will not fetch thirty guineas.

Whether our farmers should, for agricultural purposes, use that enormous animal, which had been more the fancy of the London brewers and draymen than any thing else, is for the farmers themselves to decide; and then those heavy horses—the coarse legged Lincolnshire and North Warwickshire—wore out in 12 years, while the Suffolks work at 20 and 25 years, and in one

or two cases 30 years; and they are more free from diseases than other breeds. The men should be trained to walk with the horse, and not rein up the horse to keep step with the man—for it hurts his temper, and takes away his muscle.

The Secretary—It may as well be said here as any where else, that the horses of our country are now generally more than a hundred per cent. better than they were forty years ago, and that directly in consequence of encouragement to breeding. In this State (New-York), previous to 1818, all races were prohibited. In that year the late Cadwallader D. Colden, of this city, well known as a man of sterling qualities, was in the Representatives at Albany, as was also the secretary. Mr. Colden called the attention of the members of the Legislature, to the lamentable condition of the million of horses of this Empire State. He and the secretary made it their business to examine the horses, which arrived from the country, drawing wheat in sleighs.—We saw from 200 to 1200 horses in a day thus coming in. We came to the conclusion, that the average weight of the New-York horses was not over 500 pounds, and hardly that. The secretary, with Mr. Colden's approbation, drew a bill to legalize horse racing. They found no difficulty in passing it into a law, for all the members of that body saw, that, unless skilful men could be induced to mend the horse by such temptations as the prize and the course, it would not be done. In twenty years after that law, the horses of New-York were of double weight and totally altered figure.

As for the cattle, it seems needless to go for a better race than the Yankee red, whose size is from one to four thousand pounds, and some like the Hastings oxen and some others, recall, for magnitude, the mammoth, who used to thread our paths, here fore runners of the red men.

The secretary read the following, prepared by him:

SEEDS.

The most important of all things to the cultivator, and one of the many things to which proper care and industry are not applied. No man should always depend on the seed raised by him-

self, because it is a law of nature, that seed be scattered far and wide. Her means are many—wings for some, winds for many; animals of the land for some, birds for many. But, besides the change of seed, we are extremely deficient in the selection of seed. Who ever saw a patch of garden or farm seeds, of walnuts, hazel nuts, almonds, Madeira nuts, or any other nut or seed of our earth, thrown away? In some countries, ingenious dealers dye old seeds of their original color. Mix! mix! the old and the new, the poor and the rich; and none can tell, they all sell.

Van Houtte, of Belgium, some fifteen years ago, asked the government to let him have a garden. They gave him the choice gratis, and he selected a naked sand. He made the soil and has made seeds upon it for the last ten years, and the seeds are as carefully handled, tested, and put up for sale, as our California gold dust is at the United States mint.

Such was (if not now) the previous practice of the Shaking Quakers of Niskayuna, more than thirty years ago. Then, if you bought a sixpenny paper of any seed of theirs, and planted them, you would have the pleasure that I enjoyed, that of beholding up promptly every seed, and of the right sort; on the other hand, feel the bitterness of a man's disappointment who plants the false seed, and loses one whole year on that point. We have on our table catalogues of seeds and plants from Messrs. Vilmorin, Andrieux & Co., of Paris, who bear a sound reputation for ability and integrity. Among their vast collection we find almost all those most recently brought from the world to Paris. They begin to name some of our American products with honor to the producers. There is the *Nova Superba Hoveyana*, an amarantoide —species of amaranth—a variety of *Gomphrena*, called also the orange flower of Hovey, a very remarkable novelty which we (Vilmorin & Co.) have not yet cultivated. It is very beautiful. Forty new large flower stock julys or gillies; the perpetual flowering emperor stock gilly. *Portulaca Thorburni*, one of our friend Thorburn's, which I have not seen. The Jefferson Prune, fruit yellow, washed with vermillion, is much larger than the Queen Claude, and as good, comes to maturity last of August or beginning of September. Camellias, the Daniel Webster, by Boll, our

florist, is finely lined with white, some of the petals almost white, others widely striped, well imbricated (petal lopped over petal.) The Henry Clay of a brilliant scarlet, and striped like the Bohemian pink, the central branch of it of various colors.

Mr. Lawton, of New Rochelle—I have remarked how little effect, as to draining, has followed the deep cutting and trenching of our railroads. The lands that held water before, hold it still. The land keeps its quantity of water. Large bodies of water pass off by these cuttings, and the flowing streams in ditches, seem to close the pores of the sides of the streams. These remarks apply to lands having a good share of clay in them, particularly. The old swamps, in the vicinity of the cutting and ditching, are as full of water as ever.

Solon Robinson—The sugar estates of Louisiana present great examples of the inability of open ditches to drain soil properly. Those ditches are deep, 5 to 8 feet. They are one hundred feet apart, and crossed at right angles by ditches of like depth and one hundred feet apart. These ditches merely carry surface water from the levees to the swamps and the stream shuts up the pores of the earth on their sides. They have no effect in draining the land of its great moisture.

Prof. Mapes—The Shaking Quakers once held a good reputation for honesty in seeds, but of late years their supplies of seeds are from various sources; they have none to spare; their seeds are no longer reliable.

Solon Robinson—Those who desire to witness the great amount of horse flesh used in this city, can see it on a large scale at the great mart on the corner of the Third avenue and Thirty-fourth streets. Hundreds a day are sold there.

Mr. Bowman—I have tried underdraining, and I do not agree with Judge Van Wyck in respect to the argument that it is only necessary in some peculiar spots. No sir, I believe that two-thirds of all the land in America would be greatly improved by it. As to a hard-pan subsoil, it ought to be all broken up, and proper underdraining will do it, because the moisture which keeps

it so hard and compact then leaves it, and it becomes pulverized, as Prof. Mapes has well remarked.

Mr. Scott said, in soils that are wet at the surface, by rapid evaporation of water as it dilates to increase its capacity for heat, which it robs from the soil, renders it cold. It is for this reason that underdrained lands are earlier in spring.

Subject for next meeting--Artificial manures.

Several members tasted of the Roberts' potatoes and pronounced them good.

Dr. Church presented grafts of an apple-shaped seedling pear, of a quality resembling the Seckel pear. The tree belongs to Dr. Dwight of South Hadley. It is named the Holyoke Seedling. The fruit is of a medium size—juicy, but not equal to the choicest varieties.

Mr. Lawton presented Alpine Strawberry Plants for distribution.

The Club then adjourned to Tuesday, May 3d, at noon.

H. Meigs, *Secretary.*

Tuesday, May 3, 1853.

Present—Judge Livingston, Prof. Mapes, Dr. Church, Judge Van Wyck, Messrs. Bowman, R. L. Pell, Fleet, Scott, Solon Robinson, Coleman of Brooklyn, Griffing of Jersey, Brush, Andrew B. Archbald, Fellows and others—30 in all.

Hon. R. S. Livingston, Chairman.

Henry Meigs, Secretary.

The Secretary read the following paper prepared by him:

NORWAY MAPLE.

(Acer Platanoides.)—Described by Michaux.

Resembles the sugar maple, but the leaves are not, like that, whitish underneath. The flowers are small, yellowish and superseded by long peduncles. In winter the buds of this tree are dis-

tinguished. The rapid and beautiful vegetation of the Norway maple in soils of inferior quality, causes it to be extensively planted in Europe for the embellishment of gardens; for which purpose trees are preferred that develop their foliage early, and shed it late; and that afford through the hot season a refreshing shade. Trees of fourteen years from the seed, in the nurseries of the Messrs. Parsons of Flushing, were placed on the corner of Seventh avenue and West 13th street, last fall, by Henry Meigs, jr. They are now in flower. They were set out on the recommendation of our intelligent city gardener, Mr. Curr.

The tree grows to a great size. Its wood is used by German cabinet makers; it is very white, with agreeable variations in the direction of the fibre—similar to the curled maple, and the bird's eye maple.

Joshua L. Pell, Esq., presents the following interesting paper, received by the steamer Georgia, which arrived at New-York, April 27th, 1853.

BEES.

"We were not a little gratified to observe among the names of the passengers by the Isthmus, that of Mr. Shelton the florist and horticulturist. Mr Shelton left here in September, and has returned under the auspices of Commodore Stockton and G. W. Aspinwall, Esq., bringing with him a large quantity of fruit trees, slips, flowers, seeds, and other articles in that line; but the most interesting part of his collection is four hives of bees, in fine condition, which he means to make the commencement of an extensive business in California. The prisoners are apparently anxious to commence their labors in the flower carpeted plains of the Golden State. They are all that were saved out of fifteen hives, and have been brought here with infinite care and trouble. Their movements may be seen through a window, which is constantly covered with their countless numbers. They will be set at liberty on the Stockton Ranch, at Santa Clara. Mr. Shelton has also a fine collection of gold and silver fish, which he brought in a bucket across the Isthmus.

"The trees imported under the care of Mr. Shelton are destined for the Alameda ranch, the splendid property of Commodore Stockton and Mr. Aspinwall. This beautiful piece of land, lying between the towns of San Jose and Santa Clara, is probably the finest that could have been selected in this State for horticultural purposes. The gentlemen who have undertaken to cultivate it on the magnificent scale described by Mr. Shelton, are conferring an incalculable benefit upon our State by this liberal species of investment. The gardens are at present under the supervision of Mr. James B. Kennedy, who has had them in charge two years. There are twelve miles of iron fence, enclosing a large portion of the grounds, and the farm is now under the highest state of cultivation. The Alameda Ranch will soon be known as the most elaborately worked grounds in the State."

Mr. Meigs—Mr. Shelton was invited by the Institute, while he was here, to give, at our Farmers' Club, full descriptions of the extraordinary vegetation of California, and however seemingly incredible they were, he brought forward such living and other testimony of his veracity as left us imprssed with the vegetable wonders of that State, and with a high estimate of the valuable labors of Mr. Shelton. His drawings of plants and flowers, the seeds, and the concurring evidence of Rev. Dr. Fitch, and of Mr. Dye, all combined in forming the resolution to lend him the full approbation of the Club, which was deeply pleased to find such intelligent Americans as Stockton and Aspinwall, with as much capital as necessary, to put our friend Shelton in the way of successful introduction of the Atlantic vegetables into California. And we are satisfied, that in this mission he has already gained countless good not only for California, but for the world, in the colonization of that land more wonderful for flowers than for gold, with the honey bee—whose delicious sweets will henceforth not only come to our Atlantic States, but go abroad in the world.

The honey bee (*apis mellifica*) was originally confined to the old world, from whence it was transported to America. This creature has never been known hitherto, in California. The Rocky mountains were impassable to it, and the great heat of the Isthmus destroyed the wax of the honey comb, so as to render it hitherto

impossible to carry the bee across it. Even sealing wax on letters melts in the transit. The post office department has given public notice of this fact, and recommended, instead of wax, the use of wafers.

ORANGE.

Mr. Meigs—Lindley, in his Vegetable Kingdom, calls them Citron Worts; or *Aurantiaceæ.*

The word Orange is from the original Latin name, *Aurum*, signifying gold, from their color. Of this tree there are 20 genera, and 95 species, The most remarkable of the trees of this order, are Orange, Lemon, Lime, Shaddock, Pompelmoose, Forbidden Fruit, and Citron.

The productiveness of the Orange in the island of St. Michaels, is very remarkable. One of the Azores, in north lat. 38°, had borne on a single tree, which yielded, in one season, 20,000 oranges fit for packing, besides a third more, not fit for sale. The orange contains a malic or apple-acid. Limes and Lemons contain citric acid in large quantities.

CRAB APPLE (*Michaux*).

A species of wild apple tree which is found in North America, whose nature has never been modified by cultivation. The wild apple tree of Europe, in a long series of years, has yielded a great number of species and varieties of fruit, which in France alone, amount to nearly three hundred. Except the District of Maine, the State of Vermont, and the upper part of New-Hampshire, the crab apple is found on both sides of the mountains throughout the United States; but it appears to be most multiplied in the middle States, and especially in the back parts of Pennsylvania and Virginia. It abounds in the glades, a name given to a tract 15 or 18 miles wide. No attempts have been made to improve it. here.

Andrew B. Archbald presented pigeon peas with their stems and pods, from his family plantations in Porto Rico, accompanied by the following communication.

New-York, May 2, 1853.

Hon. H. MEIGS,

Sir—The pigeon pea, (*Cajanus*) a specimen of which I have had the honor of placing before the Club for their examination, is a hardy and easy plant to cultivate. It will grow in any but a swampy situation, and not requiring any care whatever to bring it to perfection. It attains the height of from five to six feet, and produces a most abundant crop of a very nutritious and pleasant tasted pea. The main stem is about the thickness of an ordinary man's wrist, from which the branches diverge, thickly covered with bean like pods containing from four to five peas, of a light brown color. The cajanus beans perfect in about eight months from the time of planting.

This plant is sometimes applied as a manure, and when used for this purpose, is planted very close, and at the expiration of three months is ploughed into the land, forming an excellent green dressing for exhausted soils.

Some idea may perhaps be formed of the productive power of the plant, from the fact that 240 negroes were sustained upon what 33 acres yielded for nine months, upon the estate of the late Lord Cranston, in the island of St. Kitts.

Trusting that in your hands the cajanus may be of use, and that an effort may be be made to cultivate it in this country in the southern parts, believe me, sir,

Yours, very respectfully,

ANDREW B. ARCHBALD.

Judge Van Wyck—Mr. Shelton and two of his friends, Rev. Mr. Fitch and Dr. Dye, spent some time in New-York last winter. They visited the Farmers' Club of the American Institute often. Mr. Shelton stated that he had resided in California several years, that he had travelled many thousand miles in it, that its agricultural and horticultural advantages were many and great, and that it produced, naturally, fine fruits, vegetables, grapes and grains. Some of the vales were beautiful and rich, and particularly those

possessing facilities for irrigation. Many of the garden enclosures, and especially those embracing the old mission stations, some of them in the interior, a considerable distance from San Francisco, and which were occupied and improved many years ago by the missionaries first sent by Spain to reform and christianize the natives, contained the finest fruits and vegetables, and especially grapes, many varieties of the European, brought, planted and attended by the missionaries. Most of these had improved much in flavor and size of cluster, pulp, delicacy of skin, richness and quantity of juice. The haciendas and ranchos, that is, farms and plantations, were generally pretty well stocked, and growing most of our grains with success. Barley and oats were growing wild in many parts of California, stout and tall, so that a man of fair height, in walking through it, could easily tie it above his head. These and the grapes, of which there were a great variety, made the best of food for all kinds of stock. These natural oats, barley and grasses could, no doubt, be improved and rendered still better by proper cultivation. Mr. Shelton confessed that his object in visiting California was to ascertain its agricultural resources, and how these might be best improved and increased, as he always considered them the true gold of every country, more durable in their benefits, and giving the human race subsistence, health and comfort.

CRAB APPLE.

The Secretary, in reading his extracts, mentioned the crab apple as being very general in our country, and as growing finer, more of them, and more varieties, especially to the south and west. In Europe this apple is considered, and correctly so, as the original stock from whence all the varieties of the modern apple sprung. In Virginia they have them in numbers, and very fine. I have often met with them in the forests there, and when in bloom nothing could appear more beautiful, contrasted with the large rough trees in the midst of which they were standing, the flowers very fragrant, and perfuming the air for some distance. The crab apple has been much improved in Virginia by cultivation, there are many orchards of them, and they make some of the finest cider of our country. When it has a little age, and either in bot-

tle or on draught, it goes ahead in flavor of anything I ever drank in the shape of cider anywhere.

The following communication from the Rev. A. Fitch, (recently from California and Oregon,) to Hon. James Tallmadge, President of the American Institute, was read, and the *galls*, the *hyssopifolia*, and the *laurus California*, with their leaves and prints, exhibited to the club. Gen. Tallmadge's note to the club was read. He presents the specimens to the club.

TREES OF CALIFORNIA AND OREGON.

Amongst the trees of California, the oaks, pines and redwoods are most frequent.

The oaks are found in the vallies and on the lower elevations, while the pines and redwoods crown the more lofty hills, and fringe the ridges of the mountain tops.

Along the rivers and in the low grounds or flats, will be found several kinds of willow, ash, alder, poplar, platanus, or button-wood, peperidge, &c. In other localities are found the horse chestnut in two or three varieties, the fir of several kinds, arbor-vitæ, hemlock, madrana, torregi, bay, evergreen, cherry, &c.

Many kinds of oak have been enumerated, but I have never met with but six distinct varieties, viz:—The white oak, the red oak, the evergreen oak, the long acorn oak, and two beautiful shrubby oaks. What is called the coast oak, and specified as another variety, is the same as the evergreen oak already enumerated, modified somewhat in its character by exposure to the ocean winds.

There is something peculiar in the character of some of the oaks of California, in having a different style of foliage on the same tree, and I have taken specimens from limbs of the same trunk, which an unfamiliarized botanist would pronounce to be of distinct varieties. These trees do not grow in thick forests, as with us, but are sparsely spread through the vallies and scattered over the hills, as in our western oak openings, standing out like vast orchards, and one unacquainted with the region through which

he is passing, would believe himself to be passing through an extensive apple orchard, so marked is the resemblance which the oak regions bear, and the deception is more complete by the quantities of large gall nuts or excrescences which many of the trees present. These excrescences (when fresh) so perfectly resemble apples, both in exterior appearance and in the inviting juicy pulp which they present when cut open, that persons are sometimes tempted to taste of them, but their acritude at once disgusts the palate. I send you a specimen or two, but in their dried condition they have lost their tempting beautifulness.

The long acorn oak is a magnificent tree, of wide-spread branches, with a neat dark glossy foliage. It is called the long acorn oak from its extended fruit, which is very large. It is from this the Indians obtain their chief subsistence; indeed, their principal employment appears to be gathering the mast and preparing it for food. They lay up vast stores of these acorns in wicker cribs, made of willow.

The evergreen oak is also a noble tree, of wide extent, closely branched, with thick dark foliage, with beautifully rounded top, standing out like immense specimens of boxwood. It is peculiar in its varied foliage: some of the leaves will be found ovate, like the box; others sinuate; again you will find them dentate and spinescent, hardly distinguishable from the holly. The fruit of this is small. These two kinds of oaks are seldom found associated, but stand out in separate clumps.

Of the pine, I have met with but four kinds, all lofty trees, bearing cones of immense size, from ten to fourteen inches in length; three are confined to the mountain regions—the other associates with the oak, to which it seems to assimilate itself by assuming its form, not taking the single shaft, conical shape of other pines, but throwing out branches like the oak with which it is associated. Two of these produce nuts and one affords sugar. The nuts are about the size of a plum stone, and are very palatable, having very much the taste of an almond; it is called by the natives *pinos*.

On kindling a fire against one of the varieties of the pines, a white, chalky substance was observed by the miners to concrete from the sap driven out by the heat, which upon tasting was found to be tolerable sugar, from whence they gave it the name of sugar pine. The gum of this tree is regarded as very salutary —is chewed for coughs, and is considered good for pulmonics.

The timber of Oregon is mostly spruce and pine, some hemlock, arbor-vitæ, and oak. The pine is chiefly confined to the interior upon the mountains, except a few dwarfish trees of this species found along the coast. Pines seem to thrive only in the lofty inland regions; they seldom (but sometimes) approach the coast, as at Monterey.

Immense impenetrable forests of fir cover the entire coast region of Oregon, with an occasional sprinkling of hemlock, arbor-vitæ, and cedar along the rivers; amongst the firs are the yellow, the red, and the white; these all grow to an immense size—nine and ten feet in diameter is common—and I have frequently measured prostrated trees two hundred and fifty feet in length; but they attain frequently to a much greater size: indeed, sometimes, (but rarely) they are found between four and five hundred feet in height, and from eighteen to twenty-two feet in diameter; but the wood of all, except the white spruce, is of a coarse character. These trees must have required centuries to attain their present loftiness.

There is no timber either in California or Oregon that will compare with that of the West. Indeed, I doubt if there is any wood in the world that will equal our northern timber. I have seen, at San Francisco, lumber from almost every part of the world, but nothing to equal that brought from the States. That from Australia, New Guinea, New Zealand, Mexico, the Islands, Chili, and other places, will, in no way, compare with our oak, pine, and other woods. The New Zealand pine is a beautiful wood of a close texture; but like our spruce is affected by the weather, and is fit only for in-door purposes. The China timber is all of a very frail character, resembling our poplar or cotton wood of the

West. The camphor wood of China corresponds about with our sassafras.

There is no timber in either California or Oregon fit for ship building; so that the Pacific must depend upon the Atlantic States for all their ships.

All the pines, firs, and oaks, of California and Oregon, are of a coarse grain, and are apt to shrink, warp and check. The red-wood and the white spruce are the only woods that I have seen, which will answer for finishing purposes; these will, somewhat, compare with our white pine of the North, and cypress of the South.

The only large trees that I have met with, differing very much from those of the East, or are peculiar to California, are the madrona, the redwood, the bay, the torreyi, and the evergreen cherry.

The tree called madrona by the natives, is a species of arbutus; it is a magnificent tree; in its growth and size it resembles the platanus or button wood tree; and like it has the property of throwing off its epidermis or outer bark, leaving the body and limbs perfectly smooth, and a cinnamon color, giving the tree a singular but neat and beautiful appearance. The branches of this tree are clad with a rich glossy foliage resembling that of the magnolia glauca. From the extremities of the limbs come out large bunches of bloom which are succeeded by clusters of orange-colored fruit. This tree has been held in such estimation that, under the Spanish law, a heavy fine was imposed upon its destroyer. It has become rather a rare tree, as I have met with it in but few localities. Magnificent specimens may be met with in the valleys of San Jose and Sonoma: a few small specimens are to be found in Happy Valley, San Francisco. There have been some large trees here as would appear from the stumps, but they have been prostrated by the axe of civilization. This beautiful tree I think will stand the climate of the Middle States, as I have found it high up on the Columbia and Wilametic rivers in Oregon, where the frosts are sometimes very severe; and also in the cold regions of Nevada.

The California bay (of which I send a specimen with fruit) is another tree of great beauty, differing, I believe, from the bay or laurus of all other countries; there are two varieties, the broad and the narrow leaved; the narrow leaved has a great resemblance to the myrtle, for which I at first mistook it, so rich and delicate it is in its foliage, and so spicy in its perfume; this tree attains the height of forty to sixty feet, and assumes a beautiful conical shape; the blossom is not very conspicuous, but the fruit is very showy, about the size of a nutmeg; they are frequently to be found in bloom and fruit at the same time. In the warm sun the foliage throws out such rich fragrancy, that travelling through regions of their frequency is like passing through groves of spices; and so powerful is the aroma from the bruised leaves, that inhalement through the nostrils causes a violent cephalalgia. This tree I believe will stand our climate, as I have found it in very exposed and cold regions subject to heavy frosts; it would make a splendid ornamental tree for our cities.

The redwood is the most lofty tree in California; it is an evergreen, resembling somewhat the fir, but differs much from any of our thuriferous trees in the west, having a much heavier and more elongated leaf than our figs: it appears to be a species of taxus or podocarpus; it is a light wood and splits very easily, like the cypress; it is used sometimes for panelling, and resembles the red cedar.

The Torreyi, (named after Doct. Torrey of our city,) is another species of this beautiful evergreen, its great peculiarity is a nut it produces so much resembling the nutmeg, both in outward appearance and in internal structure, that it might readily be passed for that spicy produce. It is eaten by the natives; and called by the miners, the California nutmeg: but it has nothing of the nutmeg's quality, being not in the slightest degree aromatic.

The *prunus ilicifolia*, or evergreen cherry, is another tree worthy of notice, on account of its great beauty. When growing in clumps it partakes of the character of a shrub, but when standing out singly it attains the size of our largest plum trees; it is called by the miners, the California holly, which it much resembles; but

is much more delicate and glossy in its foliage; it grows very thick, and would form one of the most magnificent hedges imaginable; it produces fruit in abundance but not edible; it is perfectly hardy, having very much the constitution of our *prunus virginiana*, or wild cherry. I send you a specimen with fruit but in its dry state its beauty has all faded; yet you can form some judgment of it.

I thought in this paper to have included California's flowers, shrubs, &c., and presented its agricultural capabilities, but I fear this paper is already lengthened beyond your patience, and must leave these subjects for future papers. Yours, &c.,

A. Fitch.

Rev. Mr. Fitch said further, that these galls from the California oaks are very abundant in some localities, giving the trees the appearance of Apple trees in fruit. When fresh these excrescences are very attractive and tempting to the sight, by their beautiful appearance, giving a representation of delicious apples—but like the apples of Sodom, they sadly disappoint the palate by their disgusting acerbity.

The specimens I send are small, when compared with the greater portion, which are found there three and four inches in diameter, if gathered young, (before they begin to expand,) I think they would prove equivalent to the Aleppo gall of the shops—and they may be gathered in great quantities. These excrescences are caused by an insect that perforates a limb to deposit its egg in it.

A discussion of the subject of the day then ensued.

THE ARTIFICIAL MANURES.

Solon Robinson—We are by no means disposed to remain in the fossil state of Agriculture. We would as soon place our faith in the hoe against the plough or a hand mill against the steam or water mill, as in old notions as to agriculture; progress has seized upon that, and the eminent success of the modern impovements justifies the enthusiasm of the friends of progress. There is a certainty in the success of guano, as applied in Virginia, in the eastern

part of it, that enables us to say, that, except for its use there the land would now be depopulated, necessarily—but by guano it begins to assume its primitive fertility.

Bones have always been known as a fertilizer; when coarsely broken, they may be pronounced an eternal one, so little do they lose in one year. When properly dissolved and prepared, they afford an immediate return and pay large dividends; when coarse, they are apt to make the man that pays for them lose interest, so slow is their return. We have no evidence that the guano islands, the Chinchas, near Lima in Peru, are ever rained on, any more than Lima, where, (as the Secretary has just read) it has not rained since Cortez and Pizarro.

Prof. Mapes.—The notion that the fresh guano is better than the older, seems to be derived from the fact that the water, (about 60 per cent.) which it contains, is the advantage of it. Not so, of course. The white part of the excretiæ of birds, (on the one side of the dropping is the white phosphate) when the water of it dries out, as in old guano, it is more valuable, because of the 100 pounds of fresh which you put on the land, only twenty or thirty pounds is guano; the residue of the one hundred pounds is water.

If any one imagines that I speak here from selfish motives, he is mistaken. The subject of my special manures was never proposed or started by me. I have not the most minute interest in puffing it, for it runs its course with the experience of the day, so increasing in repute that we cannot supply the demand. Orders for many thousands of bags of our improved superphosphate of lime cannot be fulfilled by us for some time to come. It needs no puff any more than fine flour does, for bread. Nor have I ever adverted to it, except when forced by others to speak of it.

The Secretary exhibited a stem of the Alfalfa, or Peruvian Lucerne Clover, from his son's place, twenty-one inches high. The seed was sown in 1850, and no care has been taken of it since. In Peru it grows five feet high. Seeds of it received from the United States Patent Office, and California barley and Oregon wheat from the same, were distributed. Judge Livingston distributed some

of his seedling snow apples among the members. He calls it snow apple because the fruit hangs on the tree until snow comes. White flint corn, the growth of a farm near Lakeland station, on Long Island, was on the table for distribution.

The season for distribution of seeds and grafts being about over; the club, after adopting the question, how to fertilize sandy land in the best and cheapest manner, proposed by Dr. Church, adjourned to Tuesday, the 17th May, inst., at noon.

H. MEIGS, *Secretary.*

Tuesday, May 17, 1853.

Present: — Dr. Shelton, of Jamaica, L. I., Rev. J. Carter, of Brooklyn, Professor Mapes, Geo Dickey, Judge Van Wyck, Hon. John B. Scott, Dr. Underhill, of Croton Point, Messrs Scott, Bowman, Blakeslee, of Watertown, Conn., Smith, Consul Tinelli, Dr. Church, Judge Scoville, and others; thirty in all.

Nathan Shelton, M. D., in the chair.

Henry Meigs, Secretary.

The secretary read the following papers, prepared by him:

AGRICULTURAL CHEMISTRY

Has already proved of great value to the farmer, and as it developes more and more the ways in which it aids vegetation, the more it attracts the attention.

The very recent discoveries in Organic Chemistry as to flavours and odors, astonish all who hear of them the first time.

That man, by chemical science, should be able to give the delightful tastes and smells of fruits and flowers, would seem as incredible as any apparent miracle.

Professor Lyon Playfair announced lately, in a lecture to the Society of Arts, that the jury in the late exhibition at the Crystal Palace, (of which the learned chemists Hoffman and Delarue formed part), ascertained that some of the most delicate perfumes exhibited there were not, as formerly, distilled from flowers, but

generally from the most intensely disgusting substances. A peculiarly fetid oil, termed fusel oil, is formed in making brandy and whiskey. This oil being distilled with sulphuric acid, and the acetate of potash, gives the oil of pears. The oil of apples is made from the same oil, by distillation with sulphuric acid and bichromate of potash. The oil of pineapples is obtained from a product of the action of putrid cheese on sugar, or by making a soap with butter, and distilling it with alcohol and sulphuric acid, and is now largely employed in England, in the making of pineapple ale. Oil of grapes and of cogniac, used to impart the flavor of French cogniac to British brandy, are little else than fusel oil. The artificial oil of bitter almonds, now so largely employed in perfuming soap and flavoring confectionery, is prepared by the action of nitric acid on the fetid oils of gas tar. Many a fair forehead is damped with eau de mille fleurs, [water of a thousand flowers], without knowing that its essential ingredient is derived from the drainage of cow houses. These are the results of high investigations of organic chemistry. It is not difficult to conceive that far more may be discovered. Some conceive it possible to aid fruit trees in the production of new and finer flavors and odors.

[Annales de la Societe Imperiale d'Horticulture. Paris, 1853.]

Brushes made of metal instead of hair, are found to be very useful in brushing off moss, &c., from trees. They use them when the bark is dry.

CHESTNUT SQUASH OF MOROCCO.

In figure compressed at the umbilicum and at the insertion of the peduncle—has all the appearance of a large cantelope melon, with eighteen to twenty well marked ribs, a smooth shining skin, having irregular protuberances, not prominent; peduncle short and thick, little angular, inserted in a pretty deep cavity; is about three feet in circumference, of a very regular and very remarkable form. The skin is very thin, although leathery and dry; the flesh is about two or three inches thick, of a fine deep yellow color, slightly sugary when raw, cooks quickly, and then the sugar is developed; has few fibres or threads. It is much sought for by our restaurants, fruit dealers, and others, as an ornament to their stalls.

The Society distributed some of the seeds from their garden, in the spring of 1852.

THE ORANGE.

[Revue Horticole. Paris: February, 1853. Translated into French in the Journal of the Horticultural Society of London.]

The orange gardens of St. Michael, the largest of the Azores islands, Lat. 39° north, Lon. 20° west, about. Without its orange gardens, St. Michaels would be but one great field of corn. To prevent the violent winds from breaking the orange trees when loaded with their fruit, it is found to be indispensable to have thick tufted trees of a rapid growth all around and inside also, of the quintas, as the Portuguese call these orange gardens. They use for that purpose the *Myrica Faya*, the camphor, the *Pittosporum Undulatum*, and *Pittosporum Tobira.* This, Buckhouse says, has a green cylindrical fruit, becoming of an amber color when ripe, and of a pleasant subacid taste. Each of these trees offer to the eye its own appropriate color, and being (as they are) distributed over the country without order, they give to the landscape an inexpressible charm. To possess a quinta is a supreme object of ambition to every inhabitant of St. Michaels. He rises early in the morning, goes to bed late, feeds on corn bread, drinks nothing but water during his long life; all he aims at, is to have his quinta some day or other. Most of the quintas have pavilions and shady, delicious walks. These pavilions vary in form and dimensions, according to the taste of the owners, each of whom is his own architect, and we may well say that they display a truly great diversity of taste. But they all agree in one thing, and that is, a tower with a flag staff, for a flag or a pennon.

The Portuguese first introduced the orange here, and it is cultivated in every island, and is an object of commercial importance to Portugal. The Fayal orange trees were attacked by an insect, a coccus, (a bark louse,) to such a destructive degree that the culture of the tree was rendered impossible. No method was found to save them, and all the orange trees were destroyed.

The island of Terceira exported annually from twenty to thirty thousand cargoes of oranges. St. Michaels is now the grand market, but unhappily the coccus has begun there, and some plantations are entirely ruined already. Many people suppose that the

St. Michaels orange grows there spontaneously, yielding its fruit without any care; that is an error. Before establishing an orange garden, a high wall must be built, and then rows of the *Pittosporum* to break the violence of the winds. When these are grown, the ground is well dug up. The orange trees, planted in rows at the distance of 25 to 30 feet every way from each other. They then sow the ground with lupins, which when grown, they bury in the soil for the Portuguese regard it as the best nourishment they can give to the roots of the orange tree. For some years they grow beans, melons, and some other plants in the space among the trees. The orange tree does not come to full bearing until seven years old. Poor owners of orange gardens cultivate the earth in them always, but able owners leave culture in them after seven years. They trim the trees to get free circulation of air when the fruit is ripe. They flower in March and April, and the oranges are ripe in November. The Portuguese never eat them until about the end of January, at which time the fruit is in all its perfection. These gardens vary in extent from forty to eighty acres—but it is seldom that they contain oranges only—they have lemons, limes, citrons, guava and other fruit trees.

They cultivate only two kinds of oranges, the Portuguese and the Mandarin. The first has some varieties; it is singularly acclimated in the island of St. Michaels. The Mandarin orange has only been here a few years. Some of the trees are nearly fifteen feet high. This excellent little orange has lately been exported to England, and obtains a much higher price than the common St. Michaels orange. The largest orange tree I have measured here was over thirty feet high, the trunk at its base about eight feet in circumference. The quantity of fruit from such a tree is incredible; they are constantly shoring up the loaded branches to prevent their breaking down. One tree, belonging to Senor Jacintho Victor Vierva, gives annually twenty large boxes, each containing upwards of one thousand oranges.

MICROSCOPIC EXAMINATION OF ROCKS AND SOILS.

Professor Jameson, many years ago, strongly recommended the use of powerful microscopes in examining the structure of rocks,

especially of quartz and sandstone; also, compact rocks, such as basalt and clinkstone.

Ehrenberg, to whom the world is much indebted for the most remarkable discoveries in the microscopic world, has examined the black earth (Schwarzerde) of Tachermosen, in Russia, so remarkable for its fertility and its extent, covering as it does a region of sixty thousand geographical miles, with a depth of from eighteen inches to seven feet and a half, and it proved to be a fresh water deposit. Its extraordinary fertility is connected with its abundance of microscopic fossil animals, plants, and their remains. That lake must have been larger than Lake Michigan.

"The solid and liquid excrements of an animal are of the highest value as manure for those plants which furnished food to the animal."—Liebig.

IS NITRIC ACID FOOD FOR PLANTS?

At the request of the French Government, the Academy of Sciences of Paris, in 1770, offered a prize for the best treatise on the formation of nitric acid, and its production in artificial nitre beds. The judges appointed by the Academy, including Lavoisier, subjected 70 treatises to trial, the results of which, after the experience of 50 years, were stated in 1825 by Guy Lussac, as follows:

1st. All the nitrogen necessary for the formation of nitric acid is yielded to it by animal matter.

2d. Nitre is never generated from the air in substances adapted for its formation, without the co-operation of animal matter.

Soil which forms nitre is very favorable to vegetation.

Ammonia, however, is not the only source of formation of nitric acid. In the action exerted by the electric spark on the constituents of air, (which are also the same constituents as nitric acid,) we recognise a second source, which to all appearance is very xtended. Cavendish first observed that by continued spark through moist air its volume was diminished, and an acid soluble

in water was formed at the same time. He proved that the constituents of air, nitrogen and oxygen, united to form nitric acid when exposed to the influence of electricity.

GROWTH OF VEGETABLES IN PURE SAND.

Vetches.

From May to July, 10 inches, tried to produce fruit, but on the 15th the pods, without any seeds in them, withered away. In artificial soil, on the 8th of August, ripe good seed.

Barley.

In pure sand $1\frac{1}{4}$ feet high, on 25th June, and no seed. In soil $2\frac{1}{4}$ feet high, in blossom perfectly, and August 10th, perfect seed.

Oats.

In pure sand, 30th June, $1\frac{1}{2}$ feet high, in perfect blossom; August 16th, perfect seeds.

Buckwheat.

In pure sand, last of June, $1\frac{1}{2}$ feet high; June 28th blossom, continuing to blossom until September; no seed. In soil $2\frac{1}{2}$ feet, blossom June 15th; perfect seeds August 12th.

Tobacco.

In pure sand, seed sown 10th of May, did not appear until 2d of June; in October 5 inches high; no stem. In soil seed sown 10th May, up on 22d, 3 feet high and in bloom, July 25th; August 10th, seeds formed; completely ripe, September 8th.

Clover.

In pure sand, up on 5th of May; by October 15th $3\frac{1}{2}$ inches high. In soil, October 15th, ten inches high; bushy, dark green.

The first settlers of Virginia found a soil which continued to yield harvests of wheat, corn and tobacco for *a century* on the *same field, without manure!*

In 100 years there were removed from every acre in the leaves, grain and straw, 12,000 pounds weight of the alkalies. Almost all the cultivated land of Europe is in this condition.

(Revue Scientifique, Paris.)

ANALYSES.

	Of Flax Seed.	Hemp Seed.
Potash,	23.94	20.81
Soda,	0.66	0.64
Lime,	23.41	25.57
Magnesia,	0.21	0.96
Peroxide of Iron,	3.40	0.74
Phosphoric Acid,	37.11	33.52
Chlorine of Sodium,	1.58	0.18
Silicic Acid,	0.86	13.48
Carbon,	9.63	6.19
	102.34	102.18

	Of Wheat Bran.	Of Rye Bran.
Starch,	22.62	65.32
Vegetable Albumen,	1.64	3.34
Dextrine	5.28	3.78
Gluten	10.84	3.96
Fatty matter	2.82	1.92
Water	10.03	14.90

SOURCES OF AMMONIA.

Animals, vegetables, earths. All ferruginous earths yet examined contain some air. It evaporates from the skin. Sweat contains the salt of ammonia.

Chemical experiments have shown that ammonia is not only the product of the decomposition of animal bodies, but is generated where nitrogen, at the moment of its liberation from compounds containing it, is offered to hydrogen in which case they unite and form ammonia.

THE WAX, OR TALLOW PLANTS.

Judge John B. Scott.

I wish to direct the attention of the practical farmer to the importance of cultivating wax or tallow plants. Several species grow wild through a vast extent of our country from Maine to Louisana, in great abundance, and may be increased to an almost indefinite extent.

We learn little or nothing of its culture or use from American writers, besides placing it in the list of botanical plants. They are noticed by foreign naturalists, and one species which was brought from America into Britain in 1730 as a curious exotic, called the Tallow or Candle Berry Myrtle. It has been known by the early inhabitants, and occasionally collected for medicinal purposes, but never to be used for candles to take the place of spermaceti or tallow. I would urge upon you the selection of these plants for agricultural experiment. I do not doubt you will find it a source of profit, and that it will grow, like cotton, into great commercial importance, significant as vegetable wax is now.

The Myrica is a genus of plants containing ten or eleven species. Perhaps the most important are now growing in the United States.

The Myrica Cerifera of Linnæus, called the wax myrtle or bayberry, is from three to eight feet high, branched towards the summit, leaves stiff and lanceolate, serrated at the points, from 2 to 4 inches long, from one-half to an inch wide, resembling myrtle leaves, and like them when rubbed in the hand, emit a delightful and refreshing fragrance.

The first, aggregated, is spherical, about the size of a peppercorn, incrusted with a dry, white wax; the flowers put out in May, and are of a whitish color, bearing fruit in August and September. The branches of the old plant shed their leaves in autumn, but the young plants are raised from the seed; through the greatest part of the winter they appear as an evergreen. It yields a large supply of waxy matter, having the same principles as that of beeswax. It is said a single bush produces from 25 to 30 pounds of berries, yielding as much as 25 per cent of wax. The cruder wax is of a light green, though not always of uniform shade, probably depending upon the age of the bush. It may, however, if desirable, be bleached white. The wax is obtained by boiling the berries in water until the wax floats; this is skimmed off, put in another vessel, re-melted, and the skimming continued as long as any wax rises, and then run into cakes. The wax when fresh affords a balsamic odor. The candles burn

a long time, steady and equal, without guttering like tallow. They require no snuffing; emit no smoke, and have no offensive smell like tallow; but on the contrary, when suddenly extinguished, they afford an aromatic fragrance. They contain nearly 12 atoms of olefiant gas, and 1 of carbonic acid, which renders this so valuable as a combustible affording light.

Myrica Carolinensis was introduced into Britain in the 17th century, from this country. It is propagated by seeds, or taking shoots at the base of the bush and transplanting them. They are raised in light sandy soils. They produce about seven pounds of berries to a bush; from four pounds they produce one of wax of a firmer consistence than beeswax.

The Stillingia Sebifera, the insect plant from China, has been acclimated in South Carolina, and grows in the neighborhood of Charleston; it is a very hardy plant, and delights in the vicinity of a saline atmosphere. It yields a yellow flower, and possesses great economical adaptations to our country. A stearine candle factory, principally of this plant, but all of vegetable origin, is now in operation in London; for the last year, 900 hands were employed; 100 tons produced weekly—total product, 400,000 lbs., worth more than a million of dollars. The Chinese made their candles of this plant many centuries ago, though lately introduced into English manufactories. The crude wax sells in England from 22 to 25 cents a pound. It melts at 164° Fahrenheit; is white and made green by verdigris, and colored in the same way as beeswax. The bayberry melts at 169°, though when bleached at 142°, while tallow melts at 92°; possessing obvious advantage and durability over animal tallow for southern climates. Several trees grow in China—the chief of these are *croton sebiferum* and the *tomex sebifera;* it is about the height of a cherry tree; its fruit is enclosed in a kind of pod, or cover like a chestnut, and consists of three white round grains of the size and form of a small nut, each having its peculiar capsule, and within like a stone; this stone is encompassed with a white bulb, which has the consistence, color, smell and other properties of animal tallow. The Chinese make candles of this to a considerable extent. A writer observes, had they the art of purifying it, it

would be equal to the best tallow candles. They are made in a rude way, the wicks being made with a little rod of dry light wood, covered with the pith of a rush. There are other species that yield waxy matter from their branches and stems, and enter into the composition of soap in China and Europe.

I do not claim to have made any new discoveries in botany, or new properties in this class of plants, but if I can succeed in introducing and acclimating them into our country, of every variety of climate, and cultivating those that are indigenous; establish manufactories for home consumption, or a new article for commerce, I shall render some service in aiding in the development of a new source of prosperity.

Judge Van Wyck—Hon. J. B. Scott has read to us to day a very interesting paper on the wax plant, pointing out most of its beauties as a field plant, and the profitable use of it in domestic economy. Judge Scott appeared to have investigated the subject thoroughly, as all similar subjects ought to be, when introduced into such an association. Its history was given in plain, clear language; science was called to his aid, when necessary to make its character and qualities better understood. Its origin, both here and in Europe, and its progress and improvements to the present day—briefly pointed out, its different botanic names, as there are many species of the plant, were given and all traced up to the same genus or head of the family. This information appears to have been obtained from the best authors on botany and vegetable physiology, and of course much reading, labor and research have been bestowed on this interesting subject.

Hon. Louis Tinelli, late U. S. Consul at Oporto, has read us a long and well written paper, on a new artificial or concentrated manure, lately discovered and brought into use in Europe—especially on the continent. According to his history of the article, if correct, I think it destined to make an entire revolution in the making and selling of artificial manures, at the rate heretofore made and sold. Signor Tinelli states, that his will be about one-fifth the cost of the best of any of the others, and produce three or four times the quantity of any of them. I know nothing about the correctness of this, for I never heard of such a manure before.

Drs. Church, Underhill, and Mr. Blakeslee, of Connecticut, have spoken on the subject of the day: — The best way of improving sandy soils.

Dr. Underhill took a comprehensive view of the subject. He was not for giving up a shovel full of the old farm yard manure, the compost heap or the swamp or ditch muck, for any of the artificial manures. These last may be used sometimes, he thought, with good effects on some soils, in homœopathic or small doses. Mr. Blakeslee supported the Doctor in most of his positions.

The chairman—The bayberry grows spontaneously on Long Island. I have, with others, wondered why it has been neglected, considering its decided value for candles, its wax-like solidity, its agreeable perfume, and the large yield which it affords to industry.

Mr. Bowman—I concur. Why sir, this fine article was far more noticed and used fifty years ago than now.

Judge Scott—The Chinese plant, Stillingia Sebifera, was imported into Charleston, S. Carolina, and has been used to some extent.

Mr. Scott, of Staten Island — It cannot be employed here, except as a hothouse plant, for ornamental purposes.

Mr. Meigs—Lindley speaks of Stillingia Sebifera, as abundant in China, and common in most tropical countries. The seeds of it are enveloped, like those of the bayberry, in a fatty matter, from which candles are made, and also a mild oil. Lindley calls the bayberry, Myrica Cerifera, of the order 81, Myricaceæ, or Galeworts—found in the temperate parts of North America, the tropics of South America, Cape of Good Hope, and in India. Only one species occupies the swamps of Europe. They are aromatic shrubs or trees of considerable size. Comptonia Asplenifolia possesses astringent and tonic properties, and is used in the domestic medicines of the United States, in diarrhœa. Benzoic and tannic acids, with a resinous matter, occur in its aromatic bark. Wax is obtained in abundance from the berries of the

Myrica Cerifera, and from other species. The root of Myrica Cerifera is said to be emetic or drastic in large doses.

The chairman—The desultory matter being disposed of, I call up the regular subject of the day—The cheapest and best mode of fertilizing sandy land.

Dr. Austin Church—I proposed this question, and wish to obtain the experience of others, in relation to it; certainly highly important to large bodies of land. What amendments, what plants to be grown for the purpose of fertilization? I shall listen.

Hon. Louis Tinelli, late U. S. Consul at Oporto, in Portugal, was invited to speak. He complied, as follows:—

Dumas, one of the most distinguished members of the French Institute, formerly Minister of Agriculture and Commerce, under the Republican Government, in his learned lecture, on 'the Statistic Chemistry of Organic Beings,' (De la Chimie Statistique des Etres Organiques) said the following remarkable sentence: 'Chemistry is perchance on the point of giving the receipt for the composition of the best manure, the production of which will only be the subject of an industrial manufacture.' Here is proposed the solution of a great problem; here lies an immense progress in expectation! However, we were still far from attaining this great desideratum; a capital and essential impulse was still needed.

Liebig has, by his wonderful experiments, proved to the scientific world that the generality of the nitrogen or azotic gas absorbed by all kinds of grain and vegetable plants from the atmospheric air, is infinitely larger than that absorbed from the soil. If we were to continue with the old theory, which taught that 'some of the plants receive the azote from the air, but the greatest number of them receive it from the earth,' then we ought to persevere in the errors of the old practice, and continue to give the soil enormous proportions of manure, which in fact destroys all the profits of any agricultural enterprise.

The following illustration from the same Dumas, will offer a sufficient explanation of said arguments:

'Surely,' says he, 'when the Acorn which gave birth to the majestic oak which awakes our admiration, one hundred years ago began to shoot, the ground in which it fell did not contain one hundredth part of the carbon which the oak possesses at present. It is from the carbonic acid of the air that it received the rest—that is to say, absorbed the whole of it.' Now, admitting that this enormous quantity of carbon be not absorbed by the oak from the immense reservoir of nature, but that it be necessary to furnish it to the soil, the result would be, that the raising of an oak, in an economical point of view, would be impossible, while we all know, that in fact it is the easiest and least expensive. The acorn falls on the ground by its natural weight, it buries in it gradually, it germinates the medullar substance by its decomposition, supplies the necessary nourishment to the sprout, its organs get open, it gets out from the earth and rises to the air. Then the tree lives of its own life, thrives gradually and expands its branches, and grows without expense. Why should not we apply to the grain plants, to the vegetables, to the sugar cane, to tobacco, and all other kinds of plants or shrubs the same theory which we have explained in regard to the oak? And if, contrary to this theory, we were obliged to furnish the soil with the necessary quantity of nitrogen, which these plants have to absorb during their growth, agriculture would undoubtedly be attended with a complete ruin. This is indeed what often happens with lands of an inferior quality, and when we are compelled to cover our fields with thousands of quintals of manure, guano, bone dust, and other fertilizing substances, the cost of which, and the expenses of their transportation will make our agricultural undertaking a losing concern. And if, even with rich and fertile lands, in some countries, agriculture does not afford any temptation to enterprizing men, how much less would it be advisable to put into cultivation the immense tracts of uncultivated lands which cover the greater part of Europe? 'Even in England,' said Cobden on a recent occasion, 'in England, where agriculture helped by science and by all the national energy made such great progress, one third of the soil is still in its primitive state, and the two other thirds do not represent one half of what they ought to yield.' To such an alarming evil there is, we believe, an efficient remedy. Nobody entertains

any doubt in regard to the fact asserted by Liebig, and this very fact ought to fix a starting point for a great, peaceable, humane revolution. The azote is more abundant than the carbon in the atmosphere. In the same manner that the oak absorbs the carbon from the air, the vegetables and other plants and shrubs absorb their azote. The soil will accomplish the vegetation of seeds if we only supply them with the mineral matters necessary to promote it. Such being the case, the only task of the agriculturist will be to help Nature, and to give to the plants a quantity of fertilizing substance sufficient to develope their organs of respiration. But then the manure being so reduced to minimum proportions, will it be better to spread it on the soil or to give it to the seeds? On the soil it would be lost. It is absolutely necessary to give it to the seeds and to enfold them with it. So, shielded, and clothed by this beneficent envelope, the plant will sprout and commence its life under the ground, and later it will not need any artificial help at the hands of the agriculturist; it will attain by itself the treasures hidden in the atmosphere, and gradually reach a high state of fertility and maturity. There are lands so much favored by Nature, that no manure at all is required to produce one hundred bushels of wheat for one of seed; such as for instance, the beautiful fields of Syria, and some lands in the Crimea and even in Hungary. When lands are exhausted they will acquire again their former strength and fertility by letting them rest for some years. But numerous and highly satisfactory experiments lately made, under various circumstances, by eminent men of science and practice, in France, England, Italy and Portugal, have conveyed a full conviction that the fertilizing composition invented by Mr. Huguin—which might be properly called *homœopathic manure*—will, if well applied to the seeds, make the most ordinary soil equal to the best fields of Syria. The marshes of La Manche, and the sandy prairies (les Landes) of the Garonne, the dry and wild plains of Algeria and of the *Campagna Romana*, have already experienced the immense benefits of this wonderful composition. Huguin's concentrated manure is now rapidly spreading its most beneficial effects on the vast grain fields of Lombardy as well as in the rich vineyards of the Douro, and in the luxuriant olive and orange groves. I saw corn raised with

this manure, in the Province of Minho, the stalks of which were 22 feet in height. Some tobacco was lately raised on the environs of Toulouse by means of this preparation, which was pronounced superior to the best produced under the tropical sun of the Antilles. Apricot, pear and peach trees, slightly watered during the winter with a solution of Huguin's preparation, gave abundant crops of fruits visibly improved in taste, size and appearance. Potato bulbs, prepared with Huguin's manure, when planted, were entirely exempt from that dreadful plague which has lately attacked that last resource of the poor.

When we admit that the plants receive the azotic gas from the atmosphere, it will be sufficient to invest their seeds, roots or bulbs with a quantity comparatively small, necessary to promote germination and help vegetation. Fifteen pounds of Huguin's compound are considered sufficient to prepare the seeds for three acres of land; and its cost will vary from 30 to 40 francs, as the quality of the preparation varies, also according to the nature of the soil on which it must be used. Mr. Huguin modifies his manure in two different preparations, leaving the first for calcareous, sandy and gravelly lands, and the second for rock, argillous and silicious soils. To each of these two general divisions he made six subdivisions or modifications, in order to make them more appropriate and apt to produce the generation and development of the different species of vegetables, plants and trees; so there are twelve different preparations, to be used according to the nature of the soil and the quality of the seeds, bulbs or roots to be planted. The preparation of grain, vegetable or grass seeds for three acres will cost 36 francs; 36 francs for potatoes, and 40 francs for beets, cabbage, sugar, hemp, flax, tobacco, and fruit orchards. Sixteen pounds of Huguin's compound manure cost about $8, and will be sufficient to fertilize the seeds, bulbs or roots to cover three acres of land; half of the quantity, or over three-fifths to be dissolved in water of which the seeds or roots must be imbibed, and the rest is to cover the same seeds after the first operations. The water must be tepid; 36 ounces of water to one kilogramme or 36 ounces of the composition.

R. T. Underhill, M. D , of Croton Point—That we may correctly understand this subject, it is indispensable for us, in the first place, to know the precise condition of the land for which we would prescribe, not merely in sandy land, its silex, but also what peculiar disintegrated rocks are in it mixed up with the sand, for some such lands contain potash and other mineral matter which they can to some extent decompose; that aluminous earth must be added, is well known. Clay in proper portions prevents the rays of the sun from penetrating so deeply as it otherwise does into sandy land, and the proper admixture of clay with the sand, also arrests the otherwise too rapid leaching upwards of the fertilizing elements in the land, which by capillary attraction are always rising. Nothing is manure which is not soluble in water. There are but few lands without having in their vicinity the required materials for enrichment; many mineral and decayed vegetable and animal deposits. All these must be hauled upon your sandy land and mixed well with it, until you have made a true soil a foot deep. Where these rich materials have been swept by rains off your high grounds to your swamps, you must carry them up hill again! There will be no farming until that is first done. My Croton farm when I commenced, was a mass of loose sand. I have carried up from the low grounds around it twenty-five thousand loads of old vegetable, reptile and other deposits of ages, back to the high grounds from whence they came. I have rendered it tenacious of water, whereas, before that, it could not retain a drop. I have made it rich. Without this actual construction of a true soil, I could gain nothing by artificial concentrated manures.

I do not mean to utter a tirade against the artificial manures. On the contrary, I know that they are capable of affording an important stimulus to vegetation. The idea has in a measure got abroad, that we can dispense with all solid manures and avail ourselves of the few pounds of the highly concentrated manures. No, sir, small doses will never bring the land to its heart again; the very idea is preposterous. No sir! homœopathic doses will never answer. If we give out from this Club other doctrine than this, we shall deservedly fall into disrepute. I have no doubt that

the Lupin is a good article to turn into the soil. I have been astonished to behold the crops of buckwheat for two years turned into the soil, make such a wonderful alteration for the better. The Club is well aware of the extensive use of fish on sandy lands.

Mr. Blakeslee, of Watertown, Conn.—My farm was originally composed of several varieties of soil—sandy, loamy and gravelly. I found the same plan of mending good for them all. While the plants are growing, the evaporation from the land is not great. Cover the land with clover and the clover will derive much of what it needs from the air. Try clover again and again with plaster-of-paris; your land grows richer; it takes in fertility from the air. On some of my higher land where I formerly fed sheep, there is still evident benefit. We must study what plants are best, and each farmer must find out what is best for his own land.

Prof. Mapes exhibited stalks of rye six feet, two inches high, from his farm at Newark—a noble growth, and will reach seven feet in height when ripe. The field growing it has been treated as all the Professor's acres have been, with such amendments as have produced in it, the proper balance of constituents. It received two hundred pounds weight of his improved super-phosphate of lime, in addition, in 1851, but none this year.

The Club ordered the same subject to be continued, viz: The cheapest and best way to fertilize land.

The Club then adjourned to Tuesday the 7th of June next, at noon.

H. MEIGS, Secretary.

June 7th, 1853.

Present—Prof. Mapes, Prof. Wilson, of England, one of the Commissioners to the Crystal Palace; Dr. Enderlin, recently an Associate of Leibig; Judge J. B. Scott, Horace Greely, Mr. Atwood, of Jersey; Solon Robinson, Mr. Scott, of Staten Island; Mr. Meyer, of Illinois; Hammond Howe, of Cincinnati; Mr. Longett, George Dickey, John Randall, Jr., Gen. Chandler, John W. Chambers, Judge Van Wyck and others—between thirty and forty in all. Nathan Shelton, M. D., of Jamaica, in the Chair. Henry Meigs, Secretary.

The Secretary read the following papers, translated and prepared by him:

[Revue Horticole, Paris, 1853.]

TRANSFORMATION OF TWO KINDS OF ÆGILOPS INTO WHEAT.

"A simple gardner, Mr. Esprit Fabre, of the town of Adge, already known to the botanic world by his work on a new species of masilea (Marsilea) discovered by him—has distinguished himself by a very important discovery, alone, without the aid of books, not knowing any other researches than his own, has brought forward a capital fact, showing the mutability of vegetable forms. Seven years of sagacious and persevering experiments have enabled him to see with certainty in the two grasses *ægilops ovata*, and the *ægilops triaristata*, the source of, perhaps all our species of wheat, or the greatest part of them.

After speaking of the history of wheat in Babylonia, Sicily, India, Europe, Faber found the grass in his own neighborhood—the ovata—and sowed the seed of it first in 1838, in the fall. In

1839 the plants grew to about two feet high, ripened on the 15th to 20th of July; the ears here and there having one or two grains in them. The whole crop was but five for one, the straw very thin and brittle.

2d year, 1840.—The seed of 1839 produced ears more numerous, and generally each contained a couple of grains of an appearance more like wheat.

3d year, 1841.—A remarkable progress this year, all the ears are like wheat, and there are no more barren ones; each had two or three grains. The figure of the plant almost like wheat.

4th year, 1842.—The progress not so sensible as in 1841, for many of the plants were attacked by rust. The stalks still brittle like that of *ægilops*, but the ears gave two to three grains each.

5th year, 1843.—Very favorable for the experiment; the stalks grew upwards of three feet high (a metre 39 inches); in every ear two or three well grown grains; straw stronger; no difference in figure of the plants from wheat.

6th year, 1844.—All the ears filled.

7th year, 1845.—The plants may now be deemed true wheat. All these experiments have been made in an enclosure surrounded by high walls; no grass inside of it, nor any grain raised anywhere near it. It would have been ill-advised to suppose, however, that the pollen of wheat in the vicinity could exert any influence on my plants, because the wild *ægilops* grows all about the edges of our fields, and even in the midst of the wheat fields, and their character had never changed.

8th year, 1846.—I crowned my experiments by sowing the grain in an open field, broad cast, as we do wheat, and continued to sow it so for some years.

In 1850 the straw was straight, full, over two feet high; each ear contained two or three dozen grains, very farinaceous, but this crop was inferior to the three crops just before it, owing to great drought. I have now cultivated it twelve years (says Mr. Fabre) in succession; it has now become perfect wheat, and not one plant

has ever resumed its character as *ægilops*. Therefore behold a savage plant, subjected to cultivation, changing its entire figure, its aspect, losing in successive culture some of its characteristics to dress itself in new ones, to such a degree as to cause our botanists to constitute it a new species and genus of wheat. Many learned men still withhold their belief. The ideas with which they and we have lived, and grown old, are not modified yet by the light of this day, and as in other cases, many die impenitent. But the facts stated will nevertheless remain authentic. Mr. Dunal, Professor of Science at Montpelier, one of the most competent men to settle such a question, and who has preserved dried specimens of Fabre's *ægilops* at every stage of its transformation to wheat, offers them as speaking realities of the fact. He observes, that to Mr. Esprit Fabre is the honor due of demonstrating the true origin of our cultivated wheat. This truth has been a presentiment, vaguely stated of various persons, but, as well said by Mr. de Mirbel, the honor of a discovery belongs to him who has demonstrated by absolute experience, not to him who only had a presentiment of it.

(Signed) NAUDIN.

ON THE CONVERSION OF THE ÆGILOPS INTO WHEAT.

Lindley says—That no fact in natural history is more pregnant with consequences than this, which has awakened the botanic world with astonishment. That a miserable grass like the *ægilops ovata* should, in a dozen generations, actually become a cereal of the great importance of wheat would be absolutely incredible, were it not for the unquestioned evidence given by Mr. Fabre. There is so little resemblance between the plants at the point of departure, that all botanists agree in placing them in different genera, but now it appears that they not only are of the same genus but same species. The solidity of our genera and species in botany is sadly shaken by this discovery.

From the London Farmers' Magazine, April, 1853. Extract by the Secretary.

On the application of nitrogen to the soil, Mr. Thomas Garnett, of Clitheroe, grows wheat, year after year, on the same land. In 1850, in 1851, and 1852, wheat, wheat, wheat; nay, more, he produced on this same land forty bushels of wheat per acre the

first year; fifty bushels the second year, and a little over sixty bushels the third. If he goes on in this ratio, he will soon rival the Patriarch Isaac, who sowed and reaped in the same year "an hundred fold." Mr. Sawyer tried growing wheat year after year until the land stopped at fifteen bushels to the acre, which was the natural produce of the soil, aided only by the manure of nature. The Lois Weedon system goes on with large productions and no manure. But Mr. Garnett adopts a more rational proceeding. Starting off with land, no doubt, of first rate quality, capable of growing five quarters (40 bushels,) of wheat per acre, he manures it with night soil and coal ashes; how much he puts on we do not know; nor does he, perhaps, for he is near a manufacturing town, but to this he adds only two hundred pounds weight of nitrate of soda to the acre. Doubtless his land is so rich as to be liable to be followed by mildew if guano is used, or nitrate, even, in the spring; so he has been dabbling with these, also, it seems; therefore he applies them in the autumn, so that "the over luxuriance is dissipated long before the wheat is ready to shoot, and the result is highly beneficial. Now, to those skeptics who are so old-fashioned as to entertain the practical notion that manure is yet necessary to grow crops, and not to the more credulous Lois Weedon system of growing several crops per annum, totally without manure, we would address a few observations on the recognized modes of applying nitrogen to the soil, either as ammonia or as a nitrate. In the first case it is simply the gas in combination with the hydrogen, and in most of its forms easily either dissolved or volatilized; in the other, it is not only combined with another gas, oxygen, and held in pretty close affinity as an acid, but also united with the base of some alkali, as soda or a potash, involving a much more complex mode of resolution into the original elements, if indeed, either solution, evaporation, or re-solution, is necessary to fit either the one or the other for vegetable sustenance. Every farmer knows that a nitrate will often wonderfully revive a dying wheat plant. It will often recover and apparently restore a crop for which the wire-worm was charged as the destroyer. It will turn into the most luxuriant green the brownest pasture. In several instances we have applied it without one atom of success, especially to

turnips. Vastly different, however, are some trials. Those at Windsor Park, under the direction of His Royal Highness, Prince Albert, showed a produce on high undrained meadow land, of 29 cwt. 2 qrs. per acre, dressed with 2 cwt. nitrate of soda, against 8 cwt. undressed, and a balance in favor of the application of £3 11 8. Then, again, on low lying meadow, His Royal Highness had produced by the same top dressing, 25 cwt. against 9 cwt. undressed; balance in favor of dressing, £2 13 4. True, the dressings of the same quantities of guano were more favorable, as might easily have been anticipated; but we may well expect to hear of the whole park being dressed with one or the other, so great is the profit of either application. Mr. Pussey gives the probable increase in produce on grain, on land in good condition by an application of nitrate of soda, at six bushels per acre per cwt. of the nitrate; and on land out of condition, eight bushels. Hon. H. Wilson obtained by it on barley 14 bushels; Mr. Calvert do. on wheat 12 bushels; Mr. Newman on oats, 20 bushels per acre; 1 cwt. nitrate of soda per acre. Mr. Fleming obtained an increase of 12 bushels per acre by applying 1½ cwt. of the same nitrate.

As a reviver of a crop failing from one cause or another, Mr. Pussey quotes a most valuable case. He had a field of early barley cut off by frost last spring. The field was ten acres, and to this the small quantity of 43 pounds per acre of nitrate of soda was applied, with 84 lbs. of salt, which soon changed the color of the grain to a beautiful green; but one plot was left undressed for sake of comparison. At the harvest the dressed barley was six inches taller than the undressed, and the result of the dressed land was 47 bushels an acre, and the undressed 40, giving seven bushels more. The cost of the whole dressing was six shillings four pence an acre; and furthermore, the barley from the dressed land sold for two shillings more per quarter than that from the undressed land.

The essential and practical difference between ammoniacal dressings and applications of nitrates, are the following: Little variations seem to exist as to the absolute power of the plants to

appropriate the one or the other. Ammonia, if applied as a top dressing, as it always must be to grass and growing grain, will lose much by evaporation and volatilization, in some of its forms most usually applied. Hence you must be almost morally certain of rain before you apply it. In a dry season it is nearly useless as a top dressing, for, before rain comes, it has escaped into the atmosphere. The nitrates may be applied in a dry season, because a dry atmosphere rather preserves than wastes them; a wet season may wash them down too rapidly, but they do not evaporate like ammonia. Salt added seems to stiffen and brighten the straw.

[Revue Horticole, Paris, 1853. Translated by H. MEIGS.]

THE IMPORTANCE OF GUANO IN HORTICULTURE.

Mr. EDITOR—I have read in your Review, a very interesting article upon liquid manures, and I shall astonish you by saying, that I learned nothing from it. But you will comprehend me when I say that I have used it for more than twenty years. The plants raised by Burel and myself have carried off the premiums three times a year, from plants of the same sort grown without it. When I came to Paris, upwards of ten years ago, I had used it ten years already, but with the greatest secrecy, for I was a market gardener, and this secret was of the greatest importance to me. I consider this addition of guano to the liquid manure as making it superior to everything for the garden. I kept the secret, for Paris abounds in rivals. By means of it, I obtained in a *few months* plants which my rivals could not grow in several years! Now my position is changed; the English have got the secret, and their ability is too well known for us to doubt their success. I am too deeply attached to the gardening of Paris not to use every means in my power to cause it to keep the high rank which it holds in the horticulture of Europe.

When I commenced with guano, I tried two ways; one was to mix it with the earth in various proportions, and the other to dissolve it in water. In spite of all my precaution, the first plan never succeeded. I first mixed one per cent. of guano, then a quarter of one per cent. I had to abandon the plan for the solu-

tion in water. I made numerous experiments. and kept exact accounts of them in writing. You must understand that still I had to grope my way for some time. The best results were from mixing one decilitre (about the 9th part of a quart—not far from one gill) of guano to 25 gallons of water. The effect of this mixture is marvellous. But this preparation is the smallest part of the thing. The important matter is, at what time to apply it. It has more power some hours after it has been made than when first mixed. In the evening begin by putting into a tub, or some other proper vessel, the above proportions of guano and water, stir it strongly with a broom or other like thing. On the next day it is ready for use. This powerful aid must not be abused. Plants should be sprinkled with it twice a week. The effect is more remarkable when applied to dry than to wet soil. The soil must have time to dry before it is again wet with the mixture. Besides the watering twice a week, I do not mean to say that you must not use other solutions of the right sort, of horn scrapings, pigeon dung, &c. Further; never use a drop of mere water if you wish to have fine plants. I must not forget to say that the effect of the guano solution on plants in the shade, is not only not good, but decidedly bad. The light of the sun is an indispensible auxiliary. The use of the mixture should be discontinued about the beginning of September. The effect of it on the plants from New Holland is remarkable.

Guano should be kept in heaps, and if possible hermetically sealed, for it loses all its virtues by evaporation.

The influence of the mixture on the growth of carrots, turnips, cabbages, &c., is most extraordinary. I have not seen any of my plants attacked by insects which ravage the plants of other gardens.

[Annales de la Societe Imperiale. Paris, March, 1853. Translated by H. Meigs.]

ON THE MEANS AND NECESSITY OF CAUSING THE NUT OR STONE FRUITS TO FLOWER LATE, BY BOSSIN.

Of all the branches of horticulture, pomology has, without contradiction, accomplished the most remarkable progress. Hitherto the labors and researches of pomologists have been aimed at con-

quests in regard to savor, size, succession in maturity, and they have succeeded well, for a crowd of new and improved fruits have been introduced into our nurseries and gardens within the last half century—fruits which rival the best of the last century, and great superiority over many. The succession of ripening is the great question now. Colonel Lecouteur wrote from Jersey, in 1845, "I shall not cease to work at it until I have good fruits coming to maturity every week throughout the whole year, so that I can change the fruits on my table every Sunday." He recommends the planting in all the departments of France of nuts of all those trees which are the last to blossom.

Attention should be paid to the location of the trees. On a slope, it is found that a material difference in the flowering and ripening exists between the same fruit at the bottom and the top of the hill, &c. By strict attention to all the circumstances, we may change our fruits every Sunday!

CABBAGE CULTURE.

Mr. Legard, of Nottingham, gave an account of his crop, saying he began with trials to obtain better seed four or five years ago. He selected the stocks of the cabbages when at maturity—those of the closest texture, with the least disposition to burst or to run to seed, and with short stems. These he removed to the garden, and raised seed from them the following year. Each year he selected the best, and his crop has already become almost uniform in character and excellence. This crop last year (1852) was exceedingly level; he took an equal quantity of the largest and the smallest and weighed them. They averaged from 21 to 35 lbs. a piece; average weight of the whole crop 29 lbs. each. He raised 5,445 cabbages on the acre. The weight of the cabbages on one acre being more than seventy tons.

The Chairman stated the question for the day—The Cheapest way of Fertilizing Sandy Lands.

Judge Van Wyck remarked that Long Island being, much of it, sandy, the means resorted to for fertilization, owing to its being sea-girt, was naturally enough the products of the sea. The immense schools of manhadden taken in nets by the hundred thou-

sand at a haul, were, long ago, and still are, use/ it is not permanent. The substantial organic good soil must be added. Whenever it is prac... muck, marl, and other, must be mixed with the sandy s... I am not opposed to the addition of pure stimulating manures, like guano and others. I advocate, and always have, the barn yard manure wherever it is possible to obtain it.

Solon Robinson—Please to suppose, for a moment, that I am owner of an unlucky farm, as sandy, almost, as the ocean shore—such sand, pure like that the oats are growing in, on the table. I ask how can I enrich it? I am here to get an answer to that question, if possible—how to do it and make it pay. I know that gold will do that and many other hard things, but we can't manure with gold. I come here to learn.

Prof. Mapes observed that there is much difference in what are termed sandy lands, like some of those on Long Island. As to a pure sand, if we would make good soil of it, we, of course, must add the requisite organic matter to it. When land contains sufficient carbon and aluminum, it will retain the putrescent manures. The fish manures of Long Island have little duration, but if the fish were well mixed up with muck, great benefit would result. In Monmouth county, N. J., (where sandy soil is well known,) Dr. Enderlin has proved by chemical analysis that the green sand marls of Jersey contain from one to fifteen per cent. of potash. But the farmers of Monmouth have not found much good from it, unless when it is well incorporated with muck. It contains phosphorous, or phosphoric acid. Barn-yard manure is almost wasted upon those sandy lands, which have not alumina enough to retain it. In the vicinity of Freehold, N. J., by the liberal use of muck from the adjacent swamps, and guano, the farmers have made their farms worth fifty dollars an acre, which, ten years ago, would not sell for ten dollars an acre; and in some cases the land will now bring one hundred and one hundred and fifty dollars an acre. Those farmers are among the first in the neighborhood of New-York who went into the free use of artificial and stimulating manures.

Solon Robinson—My question is not understood yet, or it is not answered, if it is. Does any one suppose me to be opposed to the use of barn-yard manure? No man is more friendly to it than I am. But my case is, that I have none on my sandy farm; have not yet got so far ahead in its regeneration as to have a handful of it; muck and marl, too, are out of my reach, and my far-off neighbors who have barn yard manure, if they would sell it to me at all, it would cost me, perhaps, $20 a load to get it on my farm. Now, pray, men of knowledge and experience, what am I to do? I am like that poor fellow who had to say that he was so reduced that he had nothing to eat, and nothing to put it in! Even lime is too far off. Sir, there is plenty of such land, besides and beyond Jersey, and I defy you to find anything more sterile than it. If no member of the Club will enlighten me, I will tell how an enlightened Virginian, Willoughby Newton, did with a large tract of such barren land which he bought for the health of himself and family. He carried on to it his servants and all; but old Cuff, an ancient negro, told Massa Willoughby he wouldn't know where to get grass enough to make *one hen's nest*. The few stinted pines were scrambling for life. Now, Mr. Newton has clothed that farm, first with crops of clover, produced by a judicious use of guano first, then, after turning that in to give organic life to the soil, he has caused it already to come up to the yield of fifteen to twenty bushels of wheat an acre, where the despairing crop of three bushels of rye could before hardly be got. His land has risen in value from one dollar an acre to fifteen or twenty dollars an acre. Now, Mr. Chairman, I say that if this could be done there, it can be done here. Much of our fine organic manure rises in the atmosphere by evaporation, for we now know that the fertilizers do not leech downward, but rise upward, and pass away to help the neighboring fields. Dr. Underhill's farm has been stated to be sandy; it is not so. I have been on it; it is a sandy loam, having sufficient clay to keep its condition. Blakeslee's farm has some sandy knolls on it, but as a general thing, clay enough. I am for manure. It pains me to witness the monstrous waste in this city and elsewhere, of the immense mass of fertilizing matters. Millions thrown to waste! Sir, we get our living in this country too easy. We have in our cities too

many rag picking, coal gathering, sturdy men, women and children, who could be better employed in amending and tilling our lands. I wish they had their little country cabins to begin with, and means to get a little coat of clover on our poor lands to begin with. Wheat would soon follow. As to special manures, it has been said that I have some peculiar interest in them. So I have, but it is so far from being a pecuniary interest that I declare here that I never had, have not now, nor expect to have one cent's worth of interest in any of them. Guano is dear, but a man can carry on his back enough of it to enrich a smart field. Newton, by it, has made his farm already profitable. I wish guano was only ten dollars a ton. But we are afar off from it. It is the case of the mountain—it will not come to us, and therefore we must go to the mountain. We must quit our prejudices and our systems, and go for the cheapest and best fertilization.

Mr. Atwood, of New-Jersey.—I own in Jersey much such a farm as Mr. Robinson has just described—my land blown about in windy weather, sometimes into respectable hills. I bought it because it was a fine spot to experiment on; it was healthy, and I went to work. I have farmed it a few years in England, not long ago. The first object I had was to subsist my stock on this sandy farm; that I could not, at first make out to do, so I sent them where they could be fed. I found that marl would cost me 75 cents, a load, and common manure a dollar—my muck not yet reduced to useful condition—so I resorted to the artificial manures and guano. The barnyard manure cannot be brought to my place, perhaps, for $20 a load. I attracted the ridicule of my neighbors; however, I mixed up half a bushel of guano with an ox-cart load of muck. Of this I put too much upon an acre; I put on sixty loads, or rather my man did it, without my orders or knowledge; nevertheless, I got twenty-six bushels of buckwheat off an acre, a poor crop of Irish potatoes, and a crop of Lima beans, equal or superior to any one I ever saw. My grapes too were very good. While in England I contracted an acquaintance with Sir Joseph Paxton, of the crystal palace of London, who talked to me of acres leased for 2 s. 6 d., being brought up to pounds sterling, by a proper system of irrigation alone, and I mean to try it as far as practicable on my sandy farm.

The Secretary said: Long Island has been a great favorite of his, being in the best latitude, adjacent to this great city, its climate rendered milder by the surrounding sea, not distant from the warm Florida stream, very level, and beyond all doubt capable of being made one magnificent garden. Forty years ago, one of its largest proprietors, speaking of the difficulty of fertilizing it, was recommended by the secretary to pay poor boys for gathering plenty of seeds of the stramonium, which grows wild in such land, to let the stems, which are quite ligneous at maturity, be turned under with the plough, for three years in succession—then try other crops, and his land would have begun to possess the organic constituents of crops.

Horace Greeley.—I had my attention much drawn to irrigation recently, in Europe. The rich and profitable effects of it in the level plains of Lombardy, where fields of one acre or five acres, hedged in by turf enclosures of small elevation, just enough to contain some two inches of the water on a level, keep it for a night or a day, and then run it off to a lower field—that water comes from the melted snows of the Alps, the lakes and streams. It costs them there more than it would us. Egypt pumped up the waters of the Nile by oxen; we can do it in many places at little cost, by wind mills. On such lands as those of Monmouth, spoken of by Mr. Atwood, irrigation can be done, and wherever you can flow land with water, there will be grass, and wherever we can have grass, we can have wheat. The Jersey Phalanx contemplates irrigation. Eventually we shall find irrigation to be the best and cheapest fertilizer in all places where it can be done by higher sources of water, or by wind-mills, or even by steam power. All the surface waters are well known to contain great amounts of organic matter, which they are constantly draining from the lands, to carry out to the oceans; so is the richness of the land, for the time, wasted.

Something was said of the use of the hydraulic ram, but it was considered, that the amount capable of being supplied by it, is too inconsiderable to be of much use. Mr. Robinson said, it would be much better to have water carried up by power of wind-mills, which can always be working, when the wind blows,

into reservoirs for future use. The longer the water remains in these, the better it would be for irrigation.

Irrigation proposed as a subject for next meeting. Seconded by George Dickey. Carried.

Adjourned to June 21, at noon.

H. MEIGS, *Secretary.*

June 21, 1853.

Present—Prof. Mapes, Dr. Enderlin, Mr. Atwood of New-Jersey; Samuel Allen; Solon Robinson, Mr. Scott of Staten Island; Consul Tinelli, Mr. Low, George Dickey, General Chandler, Judge Van Wyck, Dr. Austin Church, Dr. Shelton of Jamaica, Edwin Williams.

Nathan Shelton, of Jamaica, Long Island, in the chair.

Henry Meigs, Secretary.

The secretary read the following papers, prepared by him:

(From the Transactions of the Royal Society, London, from 1700 to 1720. Published in London, 1731.)

California, the peninsula, has been known nearly two centuries. Its coasts are famous for pearl fisheries. Nor do I doubt that there are mines to be found in several places if they were sought for, since the country is under the same degree as the provinces of Cinaloa and Sonora, where there are very rich ones. Heaven has been so bountiful to the Californians, and the earth brings forth, of itself, what it does not produce elsewhere without a great deal of labor and pains, yet they make no esteem of the plenty and the riches of their country, contenting themselves with what is only necessary for life, and take little care for the rest. Parts of the country are very populous. They are a lively people. The climate is healthy. In the valleys, excellent pasture, at all times, for great and small cattle, fine springs, wild grape vines; as it abounds in fruit, it does no less so in grain, of which there are fourteen sorts that the people feed on. They have plenty of red strawberries, of which they eat plentifully. Their citrons and water melons are of an extraordinary size. Most plants bear fruit three times a year. We brought with us from New Spain,

Indian corn, wheat, peas, lentils, &c. We sowed them, and had a very plentiful increase, though we had no cattle or proper instruments to till the ground. We brought some cows, and store of small cattle, as sheep and goats, but our necessity obliged us to kill the greatest part of them. We likewise brought with us horses and colts to stock the country, and we began to breed up hogs; but, as these do a great deal of damage in the villages, and the women are afraid of them, we have resolved to extirpate them. The climate is so mild that the men go naked, and the women wear an apron covering from waist to knee.

The following is a *resume* of a paper on the preparation of flax, &c., by Prof. Wilson, F. R. S. L., one of the commissioners to the New-York World's Fair—the original paper appeared in the London Mechanic's Magazine :

The mechanical method of dressing flax is the model best adapted to the poorer kinds; but it has the disadvantage, from not touching the azotized part of the plant, to leave it with its liability to ferment and deteriorate. Schenck's plan of using hot water in the dressing of flax was known to the Malays and Bengalese for a long period. His plan was patented in 1846, and "retteries" on that plan have been established in different parts of Great Britain and Ireland. In the latter country about 40,000 tons per annum are now prepared by that method; the economy effected by adopting this mode of dressing flax amounts to some twenty per cent. The paper then goes on to state the number of spindles at work in the manufacture of linen in England—amounting to between 250,000 to 300,000. In Scotland, between 300,000 and 350,000; and in Ireland, over 500,000 spindles. The fixed capital invested in the manufacture of flax in Great Britain and Ireland amounts to over five millions sterling. The importation of flax fibre into Great Britain is about 70,000 tons per annum; of flaxseed for sowing and pressing for oil, about 5,200,000 bushels; and some 70,000 tons of oil cake for feeding—making an aggregate outlay of something between four and five millions sterling.

The club then took up the subject set apart for discussion on that day—Economical Irrigation :

Prof. Mapes, Mr. S. Robinson, Judge Van Wyck, and other members of the Club, discussed the subject very fully, and presented the manifold advantages which accrued from the irrigation of lands particularly situated. Especial reference was made to the results of irrigation as seen in the rice plantations of the South. It was urgently recommended that those of our farmers whose main crop is grass (as is the case in New-England), should adopt some measures like unto those of the Southern planters, by means of which they could ensure for their meadows an overflow of water, which would be an incalculable benefit in the contingency of a drought like that which is at present so severely elt by the farmers of this and the neighboring States.

[Philosophical Magazine—Extract by H. Meigs.]

OF THE GREEN COLOR OF PLANTS, &c.

The green matter which can be extracted from the majority of plants by means of alcohol or ether, has been considered as a pure homogeneous organic substance, and has received the name of chlorophyl, or green resin of plants.

Mr. Verdeil has discovered that this green resin is a mixture of a perfectly colorless fat capable of crystalizing, and of a coloring principle presenting the greatest analogies with the red coloring principles of the blood, which, however, has never yet been ob tained in a completely pure state.

[Annales De La Societe Imperiale. Paris, March, 1853. Translated by H. Meigs.]

COURSE OF HORTICULTURE.

By M. Poiteau.

Raspberry, in French *framboisier*, in Latin, *rubus*, in German, *himbeerestrauch*, in Italian, *rov ideo*, in Spanish, *frambueso.*

It belongs to the *rosaceæ*, the rose family. The principal difference between the raspberry and the strawberry is, that the first has its seeds in its pulp, and the latter has them naked and attached to the surface.

The raspberry has few species or varieties. They are all shrubs of a low growth, generally about three to five feet high, numerous roots, producing every year shoots which live two years, then

die to make room for the annual shoots. In the fall we cut off to the earth all the dead shoots, as well as all those which have produced their fruit; we cut off the summits of the new shoots, in order to make them branch out and give more fruit. It is best to do this in July, for it will then branch out more and give more fruit next year. To obtain well-shaped bushes soon, like those in the open fields in the environs of Paris, they plant three shrubs in one hill. Although this shrub loves good soil better than one that it poor, yet it is almost always put into the latter, and even in bad soil. It is often put in a northerly exposure, where hardly anything else will succeed, and it gives much fruit, but not so richly flavored as in a suitable exposure. We have white as well as red, and the four seasons sort. There is a sort of bramble raspberrry growing about the walls, &c., with a blue fruit, the *rubus cæsius* of Linnæus, which has never been cultivated. It has woody stems. It has the color of azure blue, owing to clear fine powder on it; this being rubbed off the raspberry is blue black.

The raspberry is served up on some tables mixed with strawberries. The juice of it being crystalized, is very refreshing when mixed with water, and is useful in putrid and bilious fevers.

Note by H. Meigs.

Lindley, in his Vegetable Kingdom, remarks that no plant of the rose family is unwholesome, that they are all remarkable for the existence of an astringent quality which has caused some of them to be reckoned febrifuges, and one, the root of *tormentilla*, is employed to tan leather in the Feroe Isles. The leaves of some of them are used as substitutes for tea. One of this family grows in Abyssinia, called *cusso*, or *cabotz*, is one of the most powerful *anthelmintics* (cure for worms). Botanists call it *brayera anthelmintica*, after Brayer, who says that two or three doses of it will cure the most obstinate case of *tænia* (tape worm).

LONG ISLAND LANDS.

Edwin Johnson has from 1,000 to 2,000 acres on the south side, about 47 miles from New-York, where the land is no better, if as good as about Lakeland station. He has, this year, growing car-

rots, twenty-two acres; beets, eight acres. He estimates the carrot crop at 800 bushels per acre, worth from thirty to forty cents per bushel, or from six to seven thousand dollars for the crop.

Mr. Ireland, who has a farm in the vicinity, thinks the Lakeland station soils better than his.

DISEASE OF THE GRAPE VINE.

Report presented to the Minister of the Interior, Agriculture and Commerce, by Victor Rendu, Inspector General of Agriculture. Imperial Press, Paris, 1853.

Luxit vindemia, infirma est vitis; ingemuerunt omnia qui cætebantur corde.—Isaiah, chap. 24, verse 7.

"The new wine mourneth, the vine languisheth, all the merry hearted do sigh."—*James' Bible.*

Sir: On the 26th of May, 1852, on the request of the Agricultural Societies of the Gard and the mouth of the Rhone, you charged me to visit the vineyards of the southwest of France and of Northern Italy, in order to study the disease and to point out, if possible, the means of preventing its recurrence. I have obeyed your orders.

Exposition of Facts.

I have visited the Departments of the Rhone, of Isere, of Vaucluse, the Drome, the Lower Alps, the Var, the mouth of the Rhone, the Gard, Herault, Eastern Pyrenees, Corsica, the Andes, and parts of Sardinia, the Lombardo Venetian Kingdom and Tuscany.

Permit me to sketch rapidly its origin and march. It had its birth in England, where it was first noticed by Messrs. Tucker and Berkley. It was concentrated, in 1845, in the hot houses near London, from whence it soon spread. In 1848 the conservatories of Baron Rothschild were invaded by it. Next year the vineyards of Puteaux and of Surene were attacked. In 1850 all the vicinity of Paris suffered from it. In 1851 it first fell upon Italy and the south of France. In the neighborhood of Paris it destroyed almost the whole crop. That year the malady, aggravated by an unusual temperature, Piedmont was forced to come to France to seek a portion of her wine.

In the spring of 1852 a cry of alarm from Montpelier and Marseilles was heard, and its echo was heard from the Eastern Pyrenees, the Andes, the Gard, Lower Alps, Vaucluse, Isere, Rhone, the Cote-d'Or, Gironde, that the disease was making frightful progress. It raged no less in Italy, and seemed to be about to destroy the crops of whole countries. Then it seemed to be about to make the tour of Europe—Hungary, Germany, France, the Sardinian States, Lombardy, Venetian States, Tuscany, the Roman States, Naples, Sicily, all had their grape vines injured by it. Spain, hitherto spared, was attacked by it on the north and the south. Greece was attacked by it. Algeria and Syria were invaded by it at the same time.

The white grape suffers most. The finest vines suffered most, and were the soonest attacked, but young and old vines suffered much alike. High vines suffered more than low ones. It is a mycelium—a flocculent fungus. Ehrenberg, of Berlin, has examined it microscopically; finds it a peculiar character; when moistened with water under the microscope, the oval fruit of the mucor is seen to project from their spores, in the form of a loop or buckle of hair. Sulphur and lime, in many forms, have been tried to arrest or cure it; little success by any method.

Conclusion.—The cause is yet unknown. Is not contagious. The only remedy of any success is hydrosulphate of lime. Please God the malady will not last forever.

(Revue Horticule; Paris, January 1853.)

RHUBARB CONFECTIONERY.

Peel the stalks carefully, cut them into pieces, an inch or so in length; cook them a quarter of an hour, then add sugar weight for weight, then let them stew one hour. Rhubarb being very watery, it is good to add during the last fifteen minutes of the cooking, some table spoons full of strong beet brandy. If you can add a little marmalade of apricots to it, the taste will be much improved. When they are done, they have pretty much the color and consistence of the preserved queen Claude prunes, to which they are not inferior in delicacy of taste.

(Revue Horticole; January, 1853.)

New strawberry obtained by Mr. Fox, of Lyons, from seed of a Chili strawberry. It is called Fox's four season strawberry. The seed were sown in 1849; the foliage is somewhat peculiar—fruit abundant, very savoury, of a deep color, when fully ripe, egg shaped.

[Correspondence of the Commercial (Oregon) Advertiser.]

SALEM, O. T., *April*, 25, 1853.

A recent visit to several places on the Columbia river, has supplied me with a few items of information, which may be of some interest to your many readers.

I cannot omit to speak of the fine scenery presented on this noble river. It reminds me somewhat of that on your magnificent Hudson.

For sixty miles above the mouth, its shores strikingly resemble the "Highlands" on the North river. Above that point the valley is wider and the grandeur correspondingly enhanced.

With a few chaste and elegant mansions along its banks, like these on the Hudson, the Columbia, and the country bordering it, would challenge comparison with any thing I have seen in Pennsylvania, the Empire State, or Canada.

These will soon be erected, for this part of Oregon is fast developing in commercial and agricultural advantages, and its population is rapidly amassing wealth.

Between Astoria and the Willamette river, there are already some fine residences, presenting an imposing aspect from the river. Among these I may mention that of James Strong, Esq., at Cathlamet, 20 miles from Astoria; that of Alexander S. Abernethy, Esq., 40 miles from the mouth, and those of Capts. Lemont and Knighton, at Helons, about 40 miles below Portland.

But the Columbia river, if it have not those attractions by which wealth and art have enhanced the beauty of other places, has natural attractions of surpassing loveliness. I refer to the snowy summits of Mounts St. Helens, Rainer, Adams and Hood, towering high above the mountain range and giving an inexpressible charm

to the landscape. My eye never tires of surveying its everlasting mountains, its swelling eminences, beautiful intervals, and its extended valley, swept by the "River of the West." I sometimes covet the talents of a Banvard, that I might convey to my friends a panoramic view of this exciting scenery, and enable them to share my delight.

The banks of the Columbia contain vast forests of fir, cedar and hemlock. Some of the trees are of gigantic growth; they are already being converted into lumber for the home and California markets. Mostly, however, it is shipped to that latter place. I have taken some pains to ascertain what is doing in this department, and I give you the result of my inquiries. There are steam saw-mills at Pacific city, on Lewis & Clarke's river, on Young's river, at Astoria, and at Tongue Point, respectively, each of them doing a good business. There are, also, some very fine water power mills in this part of the country. One on Lewis & Clarke's river, with two saws; another, a few miles up the Columbia, and still another at Oak Point, owned by Alexander S. Abernethy, Esq., and the firm of Abernethy, Clark & Robb.

This last is probably the finest mill in the territory, both as to its capacity for making lumber, and the quality of its work. The building is 42 by 60 feet. It was erected in December, 1849, at a cost, originally, of $15,000, and about an equal amount has been expended upon it since. The owners contemplate erecting an additional and larger mill, for which the power is ample. The present building stands directly upon the north bank of the Columbia, upon a small, but sufficient and never failing stream, with a fall of 24 feet.

The mill has an overshot wheel, 20 feet in diameter, and runs two saws; one an upright, and the other a circular saw. A latch machine is about being added. The upright saw makes 300 strokes, and the circular between 500 and 600 revolutions per minute. The velocity of these saws renders the lumber much smoother than in ordinary mills. Indeed, it seems almost like planed work. The mill turns off ten thousand feet of lumber in twenty-four hours, furnishing constant employment to fifteen men.

The firm of Abernethy, Clark & Robb own two ships, the "Ocean Bird," and "C. Devens," which are constantly employed in freighting the products of the mill to San Francisco. They usually make the trip in a month, and carry nearly 200 M. feet of lumber each. These vessels, and indeed vessels of any burden, can come close alongside the mills and load.

The lumber most sought is that made from the yellow fir. It is harder and coarser than the white pine of the States, for which, however, it makes a tolerable substitute. The average price of such lumber in San Francisco has been, during the past year, $65 per M.

Statements are sometimes published of the immense stature and numbers of our forest trees in Oregon, which are thought, from their magnitude, to be apochryphal. I will vouch for the accuracy of the following: From a single cedar, near Oak Point, 30 M. shingles had been made. This tree, when I saw it was not more than one quarter worked up; so that the entire tree must have been capable of producing 100 M. shingles.

From a lot of land containing not more, I should judge, than six acres, Mr. Abernethy assured me that between two and three million feet of lumber had been made.

I counted eleven 16 feet logs taken from one trunk, free from knots or limbs. The largest, 30 inches in diameter, and the smallest eighteen.

Yours, very truly, P.

There are many kinds of irrigation. Some of these may be considered as cheap modes. Some are by overflowing, from letting in the tides or tide currents, and then stopping them off after they have covered the land, thus letting in the muddy water, which causes a precipitate of organic matter. In other places water is let in that brings in scarcely any organic matter, the only use being to supply moisture. Nothing is more common than to find manures applied not sufficiently intimate in their admixture; indeed, our ordinary modes of plowing will not bring about intimate admixture. It is not that in all cases the water carries

valuable material, but that the material in the soil, not in intimate admixture with all its particles, is carried to every part where the roots of plants may travel ; it is also that water or anything else caused to pass with rapidity, changes the resident atmosphere during equilibration of temperature. We find that when a body of soil contains atmosphere for a number of days, that this portion is not in active motion, and consequently, occasional irrigation by causing particles of water to pass through the soil, moves this quiet portion of atmosphere and lets in new quantities, that are charged with ammonia and carbonic acid.

We find, also, that the advantages of irrigation by water, that in itself contains no new properties for the soil, include the action of moisture in combination with atmospheric air in creating the necessary chemical changes in the inorganic portions of the soil. It is thus that minute quantities of alkalies may be carried over surfaces of silicate which go to give strength to straw ; and it is for these causes that feldspar, receiving moisture and atmospheric air, is caused to give up its potash ; and for these reasons that limestone yields its soluble portion, and acetic and acetous acids are rendered dilute by these alkalies.

An acre of land has an immense area when in sheets of one-eighth of an inch thick. You see that the area becomes so immense that the roots of plants cannot be expected to reach every part, so that if salts are found travelling on the surfaces of parti cles, by the means already stated, there is a mechanical movement of the parts, new chemical conditions are brought about, and a new deposit of ammonia mixing with the water so evenly divided. Water in a state of rest in a cistern, can take up no such quantity of ammonia as it would while running through a thousand seives; thus you may view every particle of the soil as one of these sieves, to spread the water into a newly arranged surface so as to take up new quantities of ammonia. These remarks, perhaps, include most of the advantages that would arise from the use of water, not in itself containing any of the matters required by plants.

But there are other kinds of irrigation. When water can be received from the mountain-top charged with soluble humus,that

may be carried down in the valley for the use of plants, the results of the decay of uncultivated nature are rendered available. When the sewerage of a town is received which contains all the constituents that result from the decay of animal and vegetable matters, and the constant wear and tear of material, the amount of produce is increased. Thus it is that the Craigintinney meadows bear many crops of grass per year. It is not that the water carries all the food required by plants, but that it carries so large an amount of stimulants for the growth of plants, that it enables them to take up and appropriate the inorganic matter naturally resident in the soil which would remain in a latent state, without stimulants to cause plants to make use of it. You may rest assured that one pound of guano, divided over ten thousand pounds of water, will do more service than five pounds of guano, divided over less than one hundred. It is for this reason that our market gardeners find it so necessary to have in a state of solution their manures when applying them to crops. Many arrange their compost heaps so as to supply them with a large amount of moisture, so that the fermentation and decay may go on without the escape of ammonia, taking this liquid manure and passing it over their farms; and they continually use this method as the most economical for the carrying of food to plants for direct use.

If we pump on top a compost heap the drainage that passes from it, we carry to every part the soluble parts of those portions that are percolated by the water, and therefore the peculiar properties of each straw are carried to every other straw, and thus renders the whole mass much more even than by a hundred turnings over by a fork.

It prevents also the exit of all those gases that may be absorbed by water, and with it they are carried to the carbonaceous particles that are capable of robbing them from the water. Those who have thus managed their compost heaps, find that they never fire-fang, but that all parts undergo a healthy decomposition, so that after 30 or 60 days, the whole mass is found to be homogeneous. This is but a condensed picture of irrigation. If distilled water be used, as has already been stated by Mr. Robinson, it is found to be the successful vehicle of those substances that are

already in the soil. The very water-rams, spoken of by Mr. Allen, have been used in England for passing the water that in going through the soil had lost its ammonia, and not for anything contained in itself, but as a more intimate divisor of all those substances that are soluble throughout the soil—thus by the use of a water ram, you may get in many instances twice, three times, or even quadruple the benefit from the same amount of water.

Irrigation has sometimes a tendency, by evaporation from the surface, to lessen the temperature of the soil, while in colder weather the cause is removed for want of excess surface heat—so I think that it will be observed that there is no law of nature that is interfered with by irrigation, no benefit to be derived that is not increased by irrigation; and if we trace this action in the compost heap, we shall see that all the principles are there to be studied, for they are but a synopsis of those that are to be seen elsewhere.

Samuel Allen—I premise by saying that irrigation is always necessarily included in all farming. We hope that something practicable may come from this discussion, for the advantage of our small farmers; wheels to lift water cheaply, dams to arrest and store the water, windmills at little expense, the water ram which gives us one-eighth of the water used for power, and never tires; it is, as far as it goes, a capital that costs nothing, a little engine of perpetual work, a small fall of water keeps it a going. The water gained by ditching and draining the land can be led to a fall sufficient for the ram. Seventy years ago, I used to be sent to cut little gaps out of the edge of a turf dam, to let the water flow. I did it with a little wooden shovel, and when the water had run long enough, I used to put the pieces, which I cut to make the gaps, in again, to stop the flow of the water. This was done to irrigate the grass land, and it made the grass grow very thick.

Solon Robinson—It is worth while to go and see Buckalow's ram, which, by means of a fall procured by digging long drains, not only drains the land, but supplies his house and stables on the hill above with a constant stream of water.

Judge Van Wyck—Our farmers dread expense, and nothing but positive knowledge will prevail with them to adopt measures involving expense. There are peculiar situations where artificial irrigation is proved to be very profitable, as has been tested near Edinburgh, by Lord Morey. Water being indispensable to vegetation, and when impregnated with those fertilizing elements which it constantly takes up, and then supplied to plants, feeds with the best prepared manures for their consumption.

Solon Robinson—Mr. Peabody, of Columbus, Georgia, tried Hovey's seedling strawberries on rich soil, and had abundance of leaf and little of berries. Having a piece of gravelly soil lying but little above a stream of water, he put his Hovey's in this barren, and watered them every day; the course of things changed, for he found on them more berries than leaves at the beginning of the crop. Yes, the leaves would occupy eight times smaller space than the berries. He enlarged the field to five acres, following up this constant irrigation, and he *supplies the market with strawberries six months of the year.* His Hovey's are impregnated with the scarlet. When the plants have done bearing well, he chops them up and lets the new ones grow. It is well understood that irrigation is all that is wanted to insure full and constant crops. That great suffering and loss often come from droughts, even in rich soils; irrigation from permanent waters can never fail of bringing forth abundant food for man and his cattle.

I propose for the present that we change our subject, and that at the next meeting, on the first Tuesday in July, we discuss this question: The benefit of railroads to the agricultural interest of the United States. Adopted.

The club adjourned to the first Tuesday in July, at noon.

H. Meigs, *Secretary.*

July 5*th*, 1853.

Present—Dr. Enderlin, Dr. Antisell, Samuel Griffing, of New Jersey; William Chorlton and Mr. Scott, of Staten Island; Mr. Judd, Mr. Andrew, J. Archbald and others.

Mr. Griffing in the Chair. Henry Meigs, Secretary.

The Secretary read the following paper, translated and prepared by him:

GRASSES.

Lindley, in his Vegetable Kingdom, remarks, that the great mass of herbage known by the name of sedges and grasses, constitutes, perhaps, a twelth part of the described species of flowering plants, and at least nine-tenths of the number of individuals composing the vegetation of the world; for it is the chief source of that verdure which covers the earth of northern countries with a gay carpet during the months of winter. There are probably 40,000 grasses in all.

It is a very remarkable circumstance that the native country of wheat, oats, barley and rye should be entirely unknown, for although oats and barley were found by Col. Chestney apparently wild on the banks of the Euphrates, it is doubtful whether they were not the remains of cultivation. This has led to an opinion on the part of some persons that all our cereal plants are artificial productions, obtained accidentally, but retaining their habits, which have become fixed in the course of ages. The Gardiners' Chronicle for 1844, pages 555 to 770, discusses this subject.

Ergot in Indian Corn,

According to Roulin, is very common in Colombia. It causes the shedding of hair, and even teeth, in both man and beast. Mules fed on this ergot corn loose their hoofs; fowls which eat it lay eggs having no shells. In the district where it exists it is called *mais peladero*.

Ergot seems to be found in all the grasses, but most abundantly in rye and Indian corn.

[Journal D'Agriculture et Transactions de la Societe d'Agriculture des Bas-Canada, Avril, 1853.]

Extracts from the Transactions of the Agricultural Society of the North of Scotland.

Mr. Hope, of Fentonbarns, says, that however fixed and unalterable may be the principles and the laws which regulate the growth and the development of plants, there is, nevertheless, even within quite narrow limits, so many variations of climate and inherent or artificial differences in soils, that it would be ridiculous to pretend to be able to lay down *uniform* and *invariable rules, suitable to all crops.*

The worm almost invariably attacks the carrot crop, if planted on the same ground a second time or oftener.

When we cultivate the same crops on the same land from year to year, employing manure freely, they are more subject to injury from insects and from parasitic plants.

Root and bean crops clean the land undoubtedly, but when they are all taken away they exhaust the land as much as grain crops. Swede turnips, if all carried off the land, exhaust it more than almost any other crop, but if consumed on the farm and fed to cattle, they will afford a large quantity of manure.

[London Farmers' Magazine, May, 1853. Extracts by H. Meigs.]

ON THE EFFECT OF CHARCOAL ON THE COLOR OF FLOWERS.

The *Revue Horticole* (of Paris) contains some startling facts as to the effect of charcoal on flowers—roses of a faded color. The experimentalist covered the earth in the pots with pulverised charcoal, about half an inch deep. In a few days the flowers bloomed a beautiful lively color. He took away the charcoal and put fresh earth; next spring the flowers were again pale and discolored. He applied charcoal as before, and the deep rosy red color was again established. Violets and petunias had their colors intensified by the application of the charcoal.

ON THE ARTIFICIAL PRODUCTION OF FISH.

The world seems to be indebted to Professor Jacobi, of Berlin, who, in 1764, discovered that the roe of fish was fecundated after ejection by the female; and more, that the roe and milt extracted from dead fishes possessed the vital power, even when dead two or three days that this power is not lost.

Last year M. Boccius undertook to transport fecundated trout spawn to New Zealand. Gravel was placed in large iron boxes, with a supply of river water, in order to effect the necessary change, for, in water totally stagnant, the fish will not be produced. Owing to the warmth of the tropical atmosphere, in the journey, the young were produced before the ordinary time. The ordinary period varies from 70 to 100 days, according to temperature; but in this case we believe M. Boccius found them produced in 42 days. The effect of a stream was produced by constant dropping from a tank above the iron box, the water in which was, we believe, purified by the *valisneria*.*

The originators of the French plan were two fishermen of the names of Gehin and Remy, of La Bresse, who finding the fish failing in their streams, began to collect the spawn and apply the milt to it themselves, which they deposited in boxes or baskets full of holes, and placed in places of safety in running streams.

Applying this operation the year afterwards to a great number of fish, they obtained several thousand trout, and in a year or two more the numbers had literally increased to millions. Perhaps no animal will multiply as fast as the fish. The tench yields 38,000 eggs, mackerel 546,000, codfish, 1,357,000, the herring vast numbers. If only 2,000 of any of these come to perfection, there will be in the second year 12 millions, and in the third year two thousand millions. But how they or any one of them escape destruction is positively more wonderful than their production.

* Valisneria is a water plant, placed by Lindley in his 39th order, the Hydrocharads.

[H. MEIGS.

Ecole Theoretique et Pratique D'Horticulture en Gand: or Van Houtte's Garden at Ghent, Belgium.

We have had occasion, within a few years past, to speak of the admirable garden of Van Houtte. We now translate extracts from a pamphlet with the above title just received from Paris: "This immense garden is surrounded by ditches full of water, with quickset hedges, so low as to permit the eye to survey the vast and rich fields about the river Escaut. On the north, a plantation of Italian poplars is established, for the purpose of sheltering his garden from the heavy northerly storms. On the west it is closed in by vigorous hedges, low enough for the view of the landscape and the neighboring city. On the south, groups of dwellings for the most part occupied by the employees of the establishment. A triple row of trees leads to the main entrance. On the east a wall of over 400 feet long closes the coach houses, cabinet makers' shops, painters', packing, unpacking houses, various magazines, immense halls for the lithographers, and also coloring of the Flora of the conservatories and gardens of Europe. Van Houtte is Editor of this.

The position of the garden (only a few minutes walk from the Brussels' Gate on the east side of Ghent,) was carefully selected in reference to the wash from the manufacturing works of the city. Some fine old plants of the University garden have been destroyed by the wash. Van Houtte has used this and formed a smiling flowery scene of greatest beauty. An iron lattice gate to a broad alley shows on the right masses of magnificent Rhododendrons. On the left is the mansion, perfect in the distribution of its parts and distinguished by an exquisite neatness truly Flemish, all the parts suitably appropriated to the diverse services on a great scale. In the lower story are the offices and library; this contains all the most valuable books on botany and horticulture. One is a magazine for Flora with galleries for the preservation of seeds of all sorts and packing them up; a great business is done here in garden seeds collected from all the best houses of the continent. Exotics newly arriving from all parts of the Globe, &c., &c. A special cabinet for dried plants, &c. This seed establishment is a very curious one to the spectator; the thousands of

cases all carefully named and numbered in such a way that the most extensive order for seeds can be here supplied in a few moments with the most scrupulous exactness.

The manure establishment with its cisterns for liquid fertilizers, contains one hundred cubic metres. Here are heaps of various soils, dung of all sorts– vegetable and animal—salts, various normal earths, marsh, muck, plain soils, heath soil, turf, &c. Guano from Ichaboe and other islets of the southern oceans. I can say, without being taxed with exaggeration, that every kind of plant receives here a fertilizer specially suited to it. Van Houtte's splendid calceolarias owe their extraordinary richness of vegetation to poudrette. The conservatories are many and noble, disposed in every way to suit the numerous exotics. The apartments where the Orchideæ are nursed, on pieces of rotten wood or on cocoa nut husks, these being of a spongy nature, the roots of many kinds of plants draw salutary moisture; pieces of turf mosses are mixed with the fragments of wood to give vigor to the Orchideæ, which grow here almost as well as in their native regions. Van Houtte has employed a thousand means to keep rid of insects. How he managed to avoid the curse of insects, I asked him. He smilingly pointed to a pretty little lizard which was warming his scales in the rays of the sun, and also to some golden carabes and some orvets; insects which we ignorantly destroy; these keep his plants free of injurious insects.

One of these parterres is beautifully diapered with flowers of every form and hue. His petunia flowers measured from three to four inches in diameter. The education of plants as well as of men, demands devotion and solicitude, which true passion alone can inspire—that genius which without necessity—searching for new plants, risks his life a thousand times, said Cuvier.

[Revue Horticole; Paris, 1853.] Translated by Henry Meigs.

EXHIBITION OF FLOWERS BY THE IMPERIAL SOCIETY OF HORTICULTURE.

This society has lately inaugurated the new era in its existence, by a floral exhibition, never equalled by any exposition since the foundation of the society, in 1827. It never had such a luxurious

display of flowers before. A tent was constructed under the trees in the Champs Elysées, where every thing rendered it attractive. Doubtless the architecture was not irreproachable, but this being the first attempt—things will be better next time. The society was sensible, that an edifice, both large and light, would be in danger from those sudden violent squalls, to which Paris is so subject. The form of a T, which the society had given the tent, was one of the most unhappy they could have chosen. That mass of beautiful flower plants, with their animated colors, which, when viewed as one body, would have made a deep impression on the spectator, lost half its power by division, almost isolated, into three parts. As it was, the flowers were ably grouped. After this criticism, let us pay a just tribute of eulogy to the horticulturists.

Whether they were favored more than common by the elements, or, which is more probable, that they had doubled their efforts, it may be affirmed, that rarely has a more numerous assemblage of select plants been exhibited in Paris. Entire lots of them were nearly without a single fault; such, generally, as the cineraries, pelargoniums, azaleas, camellias, pensees, ranunculus, primiveres, and, from flowers to fruit, the pineapples and strawberries. We have always admired these specialities of the garden, but these were the finest of all, these many years.

In this vast struggle of the specialities of horticulture, it is truly hard to say to which of them belongs the sceptre of beauty. Those thick batallions of roses of Messrs. Verdier Fontaine, Jamin, Margottin, and others, are under your eye, by mere force of habit, likely enough you cry out, "Behold the true Queen of Flowers!" But when you turn to the violet tinted tissues of the cineraries and others, you are dazzled.

We remarked the boronia polygalifolia, the diosma fragrans, acacia alata, deutzia gracilis, and the septospermum bullatum, a charming shrub, with a figure like the myrtle, with flowers as white as snow, a magnificent dicentra (dialytra) spectabilis, the king of the fumitories, (resemble poppies,) which has been sent to us from China—and finally, a terrestrial orchid, the cypripe-

dium barbatum, an admirable specimen of a genus of great interest, in that innumerable family, the orchidea.

A gold medal was given by the Emperor to the veteran Parisian horticulturist, Mons. Pele, for his rich and varied plants, among them the most ornamental of which are his rhodolcia championi—that singular species of the Chinese hamamelida, (witch hazels) whose false flowers may dispute the rich eclat of camellia herself, &c , &c.

In conclusion, how happy is the man who is able to constrain nature—making it hot or cold at his will—growing in the snows of winter the richly perfumed fruits of the tropics, inverting the order of things. But much more happy he with simple tastes, whom the common order of nature contents.

The number of exhibitors was 106, and 30 out of doors. Premiums, to the number of 141, were awarded. Among them ten gold medals.

If we were bestowing prizes upon infants, one might excuse this profusion, but we always have thought and do still think, that the Imperial Society is a Serious Society, and ought to act seriously.

RUSSIA.

[Agricultural and Horticultural Exhibition, in September, 1853, in Moscow. Reported by Mr. Masson.]

The Imperial Society of Moscow gave the exhibition in the immense space (given by government in the most brilliant quarter of the city,) many hundreds of yards in length. The articles were so disposed, that nothing escaped the eye. The public entered a great gate and followed the path, which conducted them without once going back, to every point of the exhibition ; a most beautiful order, produced by the manager of the Imperial Society. The exhibition was fixed at fifteen days, alternately free and pay days; the free days had from 30,000 to 35,000 visitors each. Every instrument of agriculture and horticulture was displayed on tables—all the most ancient alongside of the most improved modern. In the middle of the hall was a monumental clock, on whose sides the time of day in all the four quarters of the empire was shown.

We saw the transparent apples of the Crimea. The products of agriculture were assembled here from all parts of the empire, and were classed in admirable order in relation to their families, genera, species, &c. Every lot of them had a ticket with the name of the producer, the province, and the proprietor. To show the trees, every lot had a branch of each tree with its leaves, flowers and fruit on it. All the grains and grasses were exhibited in the same way. Eight thousand dollars worth of medals were distributed.

Joshua L. Pell, Esq., of New-York, offers the following, received from California:

FRUIT MARKET OF CALIFORNIA.

What delightful visions of loaded apple stands does this heading call up to the minds of those who hail from the Atlantic side of the continent; what heaped baskets of yellow pulpy peaches; what piles of melting spice and butter pears; what shady vistas of trees, languishing under their delicious burthen of oxheart, early duke and honey cheries. Vividly are revived the memories of pleasant, sunny days, when we took summer jaunts into the country, and feasted ourselves almost sick on the delicacies that art, wedded to nature, had provided for us. And can we be blamed if now and then a sigh of regret for the enjoyments that are past? We can get along very well without the ice and snow of our northern winters; we can easily deny ourselves the cosy sleigh-rides, under comfortable buffalo robes and cloaks, to the music of the jingling bells, and the joyous laughing chorus of the merry, bright-eyed belles, of genuine American loveliness; without a murmur we can relinquish the invigorating and exciting amusements of snowballing, skating, &c., we can even bear the monotony of a whole year without thunder and lightning; but we cannot help sighing occasionally for the apples, peaches, cherries, plums and pears of other days.

And is there not some plan by which we may, ere long, overcome this difficulty, and banish the cause of our regrets? Are the inferior and almost flavorless apples which are seen upon our fruit stands, and which we eat merely for the name of the thing,

the best that California can anticipate? We trust not, and shall endeavor to arouse our fellow-citizens to the consideration of the subject, and to an immediate and general effort for the cultivation of the excellent fruits which have been brought to such admirable perfection in the eastern states.

There can scarcely be an expenditure of money or labor which will, in the end, if properly attended to, yield such an abundant reward as the culture of a good quality and extensive variety of fruits. The few apples we have in the market—not larger than an egg, and taken from the tree when green—retail, (you can hardly buy them by the quantity,) at twenty-five cents each; and this, or higher, has been the prevailing price for five years, whenever we have had any in market.

The same may be said of the few stunted figs and peaches that have made their appearance among us; they have been snapped up eagerly. Later in the season we will have a tolerable supply of pears, furnished by the old California orchards; these are the best product of our fruit trees, and they readily command from twenty to forty cents at the fruit stands. It will doubtless be several years ere this fruit is so plentiful in our market as to reduce the price materially, and at present first rate spice or butter pears would go off briskly. Cherries are unknown to the country, except those imported in hermetically sealed cans, for pies. We know of no insuperable obstacle to their growth and excellence, for even supposing them to be affected to a greater extent than pear trees, by the lengthened drought of our summer, this can be obviated by irrigation, and in this land of princely prices, the end will justify the means. As currants, gooseberries, blackberries and strawberries grow luxuriantly wild upon our commons, we are safe in judging the climate and soil to be well adapted to their successful cultivation; and few things, we opine, would remunerate the horticulturist better than these, when he can raise them within a short distance of a market, and bring them to it fresh from the stem. They would, moreover, yield almost immediate returns, so that the objection of time which applies to apples, and with some force to several other fruits, is in this instance entirely removed. They sell readily at one dollar per quart the

whole season through, and the first in the market bring two or three times that price. But they grow so thrifty, and bear in such abundance, that they would pay liberally for the care and labor to raise them at two dollars per gallon.

On a future occasion we may offer further and more explicit information upon this subject. It is one in which we take a deep interest, and so should all who have concluded to make California their future home.—*Alta California, San Francisco, May* 18, 1853.

Dr. Antisell observed in reference to the artificial fecundation of fish spawn, that it is known that the eggs of the female may be put into small vessels of water, and the milt of the male fish squeezed into the vessel, and fecundation follows; so that much of the process hitherto employed may be dispensed with. It is a pity that the French experiments have not furnished us with some account of the expense incurred by them in restocking the streams with fish.

As to the employment of animal manure, adverted to in the report of Masson on the garden of Van Houtte at Ghent, Dr. Antisell remarked that no country is more industrious in saving and applying that fertilizer. Boxes are everywhere provided for the reception of all. It is one of the operations of the corporation of a city. Estimates have been made of the value of each adult, and ascertained to be from three to four shillings sterling, enough to pay the expenses. No place except China has so thorough a system of manure saving. It might not be made to pay here.

A word as to the origin of wheat. It is said that it has been found growing wild in Oregon, and that it is very difficult to decide as to its being an indigenous plant there, or how it could have been introduced there.

Mr. Judd—The efforts already made to supply the best fruits of the Atlantic States to California have been great. A large number of our best trees have gone there. Little doubt exists that our fruit—apples, pears, peaches, plums, &c., will flourish there.

Mr. Scott proposed the continuation of the subject of the day—"The benefits of Railroads in this Country to Agriculture," to the next regular meeting, July 19th, at noon. Mr. Robinson, who presented the question, and several other gentlemen, who can give us what we want—faithful statistics in this matter—are not present. Carried.

Mr. Judd—I passed a short time at Mr. Johnson's farm in Geneva, and remarked his method of avoiding the wheat insects. He left his stubble high, so that it would afford means for a good surface fire. When in a fit state he burned the fields all over, and where there was not material sufficient to burn, he drew it upon the land and burned it. His neighbors doubted his policy and success, but he found next season that he had destroyed the wheat enemy, except here and there on the outer borders of the fields.

Dr. Antisell said that the experiment would probably prove too expensive, and moreover, that many of the insects take to the soil and hide there, where a light straw fire never does them any harm. Perhaps, after the burning, heavy rolling of the land might help to destroy them.

Wm. Chorlton, of Staten Island—I am a gardener by profession and practice. I think that the course pursued by Mr. Johnson acts both chemically and mechanically; the fire destroys many insects, and the caustic ash resulting from the combustion destroys some. The burning of clay in sods, &c., is common in Great Britain. There is no doubt of its advantage to the soil. In some places this burning is almost the only *manure* used.

Dr. Antisell reminded members that the burning of the vegetable matter on land by tenants had been prohibited. Experience has established the benefits derived to the soil by burning clay.

Mr. Judd—Mr. Johnson does not recommend burning in all cases, but he does believe that where one can save a crop of wheat by it, it is economical to do it, there seems to him to be no alternative.

Mr. Chorlton expressed his conviction that to destroy the fly, burning may be very profitably resorted to.

Mr. Judd said, the burning liberates a portion of feldspar and of potash, which are very useful to plants.

Mr. Chorlton spoke of the numerous applications of lime to soil, and remarked that according to his own experience, lime should always be applied to the soil when in its caustic state. He had formerly an old garden full of insects, and it was cleared of them by a dose of caustic lime. The old garden had been well manured twenty years before that. The benefit of the caustic lime dressing continues for some time.

The Secretary said, that in the absence of the proposer of the question of the day, and other gentlemen capable of doing justice to it, especially in its most important point, its statistics, he would now attempt merely to open the great subject. The monster production of the mechanic art, the locomotive, had come to the aid of the farmer. The tedious journey of seven miles to market, with a few hundred pounds of farm product, is changed to any number of tons which are required, reaching market from a country whose diameter is 100 miles, in the same time that the poor little country wagon is going 14, and instead of a rugged road shaking the milk to butter, addling the eggs and spoiling delicate fruits, coming as smooth as on ice. The circle employing the wagon contains about 160 square miles, or an hundred thousand acres; that traveled in the same time by the iron horse contains between four and five millions of acres, or forty times as much surface sends its productions to market now as were sent by the wagons formerly. A city of four millions of people can be now provided with all the fresh, tender, delicate articles of consumption as easily as one of an hundred thousand could be formerly. And the people also come from the said district in equally great numbers and equal facility. Whole towns, old and young, come to the city in two hours. An immense saving is made in the rolling stock and horse flesh of the same district. Exact statistics would demonstrate that this saving would, in seven years, railroad another district in like manner. All the wheelbarrows, carts, wagons, gigs, coaches, baggage horses and

all, resemble so many pigmies at work when compared with the mechanic monster—the steam engine—whose hauling powe equals a wilderness of horses on the land and a hundred whales on the ocean, and for his ten days hauling across the ocean, more than equal to thirty relays of whales for the single trip. These are seemingly extravagant sayings, but the future doings of the mechanic monster will render them a curious specimen of old fogyism, in the opinion of the readers of a few years hence.

I am pleased that this subject is retained, that we may gather knowledge from many gentlemen who have devoted time and talent to its consideration.

Andrew B. Archbald presented pigeon peas from their family plantation of Porto Rico. Also, some Dutch long pod kidney beans, Windsor beans, case knife beans and China dwarf, French beans and the common white beans, from Montreal, Canada.

William Chorlton, horticulturist, of Staten Island, presented his treatise, entitled, "The Cold Grapery," from direct American practice. A concise and detailed treatise on the cultivation of the exotic grape vine under glass, *without artificial heat*, by Wm. Chorlton, gardener to J. C. Green, Esq., of Staten Island, New-York.

Adjourned to Tuesday, July 19, at noon.

H. MEIGS, *Secretary.*

July 19*th*, 1853.

Present: Professor Mapes, Messrs. Solon Robinson, Judd, Scott, Hart, Van Wyck, Tinelli, and others—14 members in all.

Lewis W. Tinelli, (late U. S. Consul at Oporto,) in the chair.

The secretary read the following papers, translated and prepared by him, namely:

THE EARTH, PLANTS AND MAN.

[By Joachim Frederick Schouw, Professor of Botany, in the University of Copenhagen.]

The plants disclosed in the ruins of Herculanæum, Pompeii and Stabiæ, enable us to judge of the alterations in them, during the long period of 1700 years. The remains of plants—the painted plants—those in mosaic, remain to instruct us. Many of those painted are fanciful. The stone pine, the cypres, the aleppo pine, the dwarf palm, wheat, barley, millet; no indian corn, no rice; broad beans, perfectly like our modern; asparagus in bunches, onions, radishes, turnips, a small gourd; the olive—a glass jar contained olives, which retained their flavor; the oleander, perfectly the same with ours; no lemon, orange or citron; the citron was introduced into Italy in the third century, 200 years after the cities were buried; the orange and lemon still later, pears, peaches, apples, cherries, almonds, plums, medlars, pomegranates were there.

PROF. SCHOUW, ON THE COTTON PLANT.

We are able to trace the history of the diffusion of the cotton plant and cotton, with a tolerable degree of probability to periods before the birth of Christ, when it was probably confined to India. Herodotus, who lived in the fifth century before Christ, relates, that the Indians made their clothes of a wool, like that of a sheep, but finer, grown on a plant that yielded this instead of a fruit. Arrian says, that the Indians made their clothes of a fine white kind of flax, which grew on trees. It is assumed, that the precious material, called byssus, spoken of among the Jews, was cotton. The growth and use of cotton, seem to have been diffused shortly after the birth of our Saviour. Strabo, in the first century, the fore part of it, speaks of its growth and manufacture in Susiana, on the Persian gulf. Pliny mentions its growth in India and Upper Egypt, and that the priests there used it for clothing. In all probability, the Arabs brought it into Europe. In the time of Mohammed, cotton was generally used for clothing. Its first cultivation in Europe was in Spain. Cotton goods came from India, by the way of Constantinople to Europe, in the middle ages.

It is not known when it was introduced into China, but there are various reasons, leading us to suppose, that it was introduced in the ninth century, before which time silk was the general clothing, while now the poor clothe in cotton and the rich in silk. Cotton stuffs were of very limited use in the middle ages. There were cotton manufactories in Granada, Spain, in the thirteenth century; at Venice in the fourteenth; in Flanders in the Sixteenth; in England in the seventeenth. It was difficult to make it pay in Europe, because the Indians and Chinese had carried the manufacture to a considerable degree of perfection, and their labor was very cheap. Machinery has now reversed all this. One man, with one spinning machine, spins as much yarn in one day, as an Indian does with the distaff in a whole year.

SUGAR.

The ancient Greeks and Romans were unacquainted with the general use of it. Pliny speaks of the saccharum of India, and Arabia Felix as a kind of honey, gathered on canes, white, like honey, crumbles between the teeth. The largest pieces gathered, are about the size of hazel nuts. It was used in medicine; but sugar is of the greatest antiquity in China, perhaps in India. Cochin China and India are usually cited as the native homes of the sugar cane, and where it is found growing wild. The crúsaders extended the knowledge of sugar in Europe.

Prince Henry, the navigator, carried the sugar cane from Sicily to Madeira, towards the year 1500—it went to the Canaries—then to St. Domingo, and so through the West Indies.

COFFEE.

The use of coffee is certainly recent. Roman and Greek knew nothing of it. Abd el Kader, about the year 1700, places the use of coffee, generally, no further back than about 1450. Previous to 1650, very little was known of it in Europe, except in Turkey. Prosper Alpin, a botanist of Padua, who was in Egypt about 1600, says, it was in general use there, but unknown in Europe; and says it was used as a medicinal agent, rare in Europe.

A coffee house was first opened in Marseilles in 1671. The first in England was brought by a merchant from Smyrna, who brought a Greek girl with him to prepare his coffee; she married his coachman and they opened the first coffee house in London. The first one opened in Paris was in 1672.

[Annales de la Societe Imperiale, March, 1853.]

QUILLAYA SAPONARIA. (MOLINA.)

By M. Pepin.

Since 1847, and especially 1848, many merchants of Paris, particularly Messrs. Coqueret, Jomard & Co., druggists, have brought me specimens of tree bark, received by them from Chili, as having the properties of soap, they only knew it by name. They called it vegetable soap, or soap tree. There have long been known other kinds of soap plants and exotic trees, so called, and Linnæus named them the soap family. I referred to one collection, especially to that of Mr. Webb, a distinguished amateur botanist, and found in it samples of the quillaya saponaria in good condition, and I recognized it as the same described by Molina, and that it has for its synonymes, smegmadermos emarginata of Ruiz (the Frenchman says Ruitz) and Pavon; smergmaria emarginata of Wildenow, belong to the rose family, the rosaceæ.

Quillaya is a medium sized tree, short trunk, and has a very thick bark, very fibrous, whitish inside and out, of an ashy gray when young; when advanced in age it looks much like a little old apple tree, the wood is like that of the pear somewhat, splits easily, is hard; the Chilians make stirrups out of it. But that which makes it precious to the Chilians is its bark, which is pulverized, and in water it makes soap almost instantaneously. They make a considerable commerce of it. The Peruvians export it in quantities. The Chilians call the tree Quilloam, signifying to wash.

The bark, when pulverized and put into water, cleanses (especially well) silk, velvet, linen, and woolen cloths; it takes spots out as perfectly as can be done with the best soap. The Chilians cleanse and gloss their hair with it every day.

According to chemical analysis, it contains much Saponine, never injures colors, not even delicate tints. The tree (say Mr. Gay and others) is common in Chili, and above all in Chiloe. It

is also in Peru, but not plenty. It is desirable that it should be introduced into Europe, where, in many places, it would flourish. Many trees from Chili stand the winters of France very well.

Mr. Meigs.—I have translated this, because, if deemed profitable to our people, we have proper room for it, and almost every other plant on earth, and we should love to embrace the entire vegetable kingdom without our republic.

[Lindley's Vegetable Kingdom.]

ARTOCAPACEÆ—(BREAD FRUIT.)

The genera are 23, and the species 54. The most valuable is the Bread fruit tree, and the most virulent is *Antiaris toxicaria*, or *Upas tree.* The species furnish both edible fruit and caoutchouc, (India rubber.) The Bread fruit contains a large quantity of starch. The venom of the Antjar poison, *Antiaris toxicaria*, is due to the presence of that most deadly substance, Strychnia. Notwithstanding the exaggerated statements that have been made relative to the Upas of Java, there remains no doubt that it is a plant of extreme virulence; even linen made of its tough fibres is so acrid as to justify the story of the Shirt of Nessus! for it excites the most distressing itching, if insufficiently prepared. However, the seeds are always wholesome!

The *Palo de Vaca* or *Cow tree* of South America, is of this order, and yields a copious supply of rich and wholesome milk, as good as that of the cow. It has been analyzed by various chemists, especially by Mr. Edward Solly who found in it more than thirty per cent. (one third) of galactin. The tree called the *Ule of Papantha*, S. America, from which caoutchouc is obtained, is of the same order; it is the *Castilloa elastica.* A like substance is obtained from the tropical tree, *Cecropia peltata*, whose light and porous wood is used by the savages to give them fire and light by friction. From a species of Antiaris, called by Mimmo, *Lepurandra saccidora*, sacks are made in Western India in this way: They cut a branch of the size of the required sack, soak it a little, beat it with clubs till the fibre separates from the wood, pull it off from the wood, turn it inside out. These bags are in general use. Some of them were shown to the Linnæan Society, some years ago. The

fig was considered as one of the family. Snake wood, or *Bois des Lettres*, (Letterwood,) so called because its wood presents marks resembling letters, is of the family. It is a tree of 60 to 70 feet high, so hard that only an American axe can fell it!

ACTION OF THE SOLAR LIGHT ON VEGETATION.

Helmholz pointed out, in 1847, the mechanical effect of radiant heat, in deoxidizing carbon and hydrogen from carbonic acid and water, in the green parts of plants. By this action, combustible substances are produced by plants, and the mechanical value of them is found by ascertaining the amount of heat produced by such plants, in burning and multiplying by the mechanical equivalent of the heat unit. Taking from Liebig the estimate of 2,600 pounds of dry fir as the annual produce of one Hessian acre, or 26,910 square feet, and assuming at a rough estimate 4,000 units centigrade as the heat of combustion of unity of mass of dry fir wood, the conclusion is that all the heat of fires obtained by burning wood grown from year to year, *is solar heat reproduced!*

The lemon has been employed in constructing a small galvanic battery—done for a few pence. The lemon contains three constituents of the battery. It decomposes water, acts strongly on the magnetic needle, precipitates metals, acts on the nerves of the eye, &c. The duration of its action is considerable, on account of the abundance of nitric acid the lemon contains. It is a thousand times better than the hydro-electric chain.

The Chairman stated the subject of the day to be, The benefits of Railroads to Agriculture.

Mr. Solon Robinson.—Sir, I proposed this question, and hoped to see here those who are far more capable than I am to render justice to its great importance; however, for want of a better, I will begin. I have tried to convince farmers of the immense value of this rapid communication to them—that it was their salvation. The first effect has been to bring beef cattle one thousand miles to our market in a week. Game, poultry, come the same distance in forty-eight hours. The oxen come as

the market requires, notice of which goes by telegraph for the number required. The cost per ox is about ten or twelve dollars, whereas, on foot, as of old, the oxen travel with loss of flesh and heavy expenses on the road, from sixty to ninety days before they reach New-York. Strange that many farmers do not understand this. Sometimes our city would starve without this railroad supply. Last spring all the chief articles within striking distance were exhausted; now we rarely have on hand one hundred oxen at a time. Some cattle are shipped from Chicago to Buffalo; some from Indiana go by cars to Cleaveland on Lake Erie, thence by cars to Dunkirk and to Buffalo, thence the greater part come by the Hudson river. Last week there came in a drove of cattle raised by the Cherokee Indians, marked with their hieroglyphics. An Illinois drover had bought them, fed them a while, and then brought them here by railroad, &c. Look at the map and see what a walk that drove must have had to reach New-York without the steam and railroad. Oxen can travel only about ten or twelve miles a day. And our milk for the morning coffee was milked last night, and drawn from Chatham Four Corners, 130 miles distant from our city. Some years ago it was proposed to Mr. R. L. Stevens to have a freight train on his road, but he thought one car only would be used, and that would not pay. Now look, there is a blackberry train! All this intercommunication is a great civilizer; all sorts of people are brought to a knowledge of each other, and a knowledge of the business of their own country and the world. The birds used to have the blackberries all to themselves, nobody could get at the one-thousandth part of them. I say nothing of the whortleberries which now come by rail, and are on the tables of everybody. And the lands near the railroads are growing more valuable every day, and they are in course of cultivation and improvements, and without the railroads they would not have been reached this century, and hardly that. The benefits go with the roads. One improves the other with a rapidity which resembles that of the trains which glide through the lands.

Judge Van Wyck had no doubt whatever of the benefit to agriculture from railroads. He enumerated many of the facilities to those living in cities, the immediate benefits of the roads, the

easy subsistence of our numerous people by means of them, the great growth of settlements within the neighborhood of the railroads, the increasing value of all our Atlantic States property by the pouring in of every requisite supply from our immense interior, the vast number of persons conveyed to and fro on business and for recreation by the railroads, all demonstrate the benefits they have already produced, and the future is full of more and more advantage to our posterity from the same causes.

Mr. Judd observed that he was not certain that there exists much opposition to railroads among our farmers, nothing near as much as there is in this city to the Broadway railroad. Some farmers are interested in their opposition, but at large the farmers have subscribed liberally for railroads. Many have tried to get the roads to go through their own farms.

Prof. J. J. Mapes—This subject has been treated so ably by Mr. Solon Robinson, that I can hardly add to it anything important, however, I can state, that besides their immense utility in the transportation of cattle, they now carry from our cities into the heart of our country very large and valuable amounts of the fertilizers—the guano, the spent ashes of soap boilers, pot ashes, bones of animals, from Cincinnati particularly, common salt for manure. All these are spread by our railroads far and wide, which would have remained at home for want of the freight trains. In New-Jersey we have two railroads, both of which are still opposed by many. As to the stock being owned by farmers, it is chiefly owned by European capitalists. Our Hudson River railroad was opposed by almost every farmer on its line. The cost of freight by the roads is diminishing. Soon we shall have suitable pieces of ship timber shaped in the Green Mountains (to render it more portable) brought to our ship yards by railroads. The natural curved pieces are already scarce. Blanchard has set his remarkable inventive genius to work; he can now take the straight timber, green in the mountains, of eight inches (or larger if required, as for futtocks, for large timbers only require large curvatures) square, bend it to the desired curve, stay it there, and send it by railroad to the ship yards. Hitherto, a tree containing only a few naturally curved pieces has been valued at twenty-

five dollars. A great saving of expense, and a superior strength in ship frames, will be the direct result. The cost of freight by the rail of Belgium was two, ours two, but the Belgian has gone down to only one-third of our freight price. I will advert to a matter which does always excite surprise, that is, the first trade on the Camden and Amboy railroad. In one week more peaches have passed over that road than the whole amount of fresh fruit in Great Britain in a year. Ninety thousand baskets of strawberries have passed one of our railroads in one day. At eight cents per basket, freight, the Camden and Amboy railroad have received $1,100 in one day for freight on peaches. Blackberries and whortleberries to supply every table in the metropolis pass the road daily. In all this magnificent supply of ripe, fresh fruit, you see the noble effect in point of health to the million of New-York and its neighbors. Yesterday seven large cars of the largest class, loaded with milk, came to Jersey city as its daily work. There are milk merchants who employ in that alone one hundred thousand dollars per annum. A district capable of fine gardening is soon to be opened in Monmouth county, by means of railroads, where one horse can drag the plow about as easily as two can elsewhere, so light is the soil. A garden equal in extent to almost all the present market gardens of the great city will soon add her rich vegetable and other products to her supply. The market can be supplied far cheaper than it is now if proper measures are taken; for instance, I sell on my farm fine heads of lettuce for seventy-five cents a hundred, while the hucksters of the city sometimes sell for eight cents a piece. The charcoal dust from the spark catchers of the locomotives, once so neglected, is now in demand at fifteen cents a bushel, goes to the fields. Admirable it is, as an amendment of the soil. The transportation of the manures by wagons is slow and expensive. But besides the transportation of all the solid matters of the farm, railroads carry thousands of farmers to the fairs, where they give and take away knowledge; where they leave seeds, &c., and take away others; where I have seen a farmer with a hundred small packets of choice seeds in his pockets, intended for his farm afar off; where he learns that the poor hybrids of some farms, when brought into comparison with the pure sorts, make him ashamed

to have ever cultivated such wretched carrots, parsnips, beets, &c.; where he buys farm implements of superior value; where he can procure a reaper worth a dozen of the best scythemen a day; where he learns many precious lessons as to the management of his farm. All these, but for the railroads, would still be unknown and unused.

Mr. Hart, of Brooklyn.—I visited Louisiana in 1838, before the railroad had been laid, and at St. Louis in 1838, and observed the diminutive size of the potatoes. On inquiry, I learned that it was owing to bad seed and the great cost of importing better. Some were bought at $1.50 a small box. The college garden received some that were good; an acre produced 500 bushels, worth $750. Now they raise 300 bushels an acre, which sell for twenty-five cents a bushel. I saw Governor Carlton in 1839, who said Illinois shall have a canal and a railroad too—so said the farmer—and if our government won't consent, we will make the roads and canal without it.

Thaddeus Selleck, of Greenwich, Conn., was not able to attend, but desires the secretary to give a few remarks from him, on the subject of the day. He was intimately acquainted with the operations of the Erie railroad, at the beginning of it. That on the line from Piermont to Goshen, in Orange County, about eighty miles from New-York, the farmers had been promised by the company payment for their lands taken for the road, and also fencing the sides of the road; but the company failing, left many unpaid and many farms unfenced. This created a strong opposition on the part of the farmers, who, being unpaid and unfenced, were much annoyed by trespassers on their farms and damage to their fruit trees, &c. I presume that they have since been satisfied by the company. As soon as that road was in operation I started the project of bringing milk to New-York by that road, on a great scale. I had all sorts of trouble to get it a going; the farmers doubted; they ridiculed it, but at last adopted it. They soon saw the benefit of it, and seemed to try to flood the city with milk, like another Croton with water. The pure country milk dispensed its blessings among our fellow citizens, at a very

cheap rate. I drew compliments from several leading physicians and others; they said I was a benefactor, etc. Such a flood of milk came, that the company had to devote one entire train to milk alone. One of the means of completing the railroad has been the popularity given to it by the milk business, at the commencement of their operations, so beneficial was it acknowledged to be, by all parties. Now I believe that milk comes to this city by all the railroads, and yet now a *can*, containing sixty quarts of milk, pays thirty cents for sixty miles, while a *man* commutes the same distance for about as many cents. More attention ought to be paid to the ventilation, care, &c., of the milk and other articles that are delicate and perishable, than there now is; proper persons, ice, &c., should be provided. I am one of those who believe that railroads should be made for the good of community. That those who are in the management, should see to it, that the people do derive the greatest possible benefit from them. That, if the management was as complete as it can be made, an immense popularity would be attained. As our lamented Henry Clay once nobly said, "He would rather be right than president." So should the great men, in command of our railroads, rather be right than quite so rich.

Our railroads will be doubled in ten years, and they must take the measures to make them popular.

Mr. R. Robinson Scott.—Without railroads, many vegetables of a somewhat hardy character, can come considerable distances to market, but the tender and delicate kinds cannot; among these are lettuces. Now, as to fruits; the rail brings them first from the south and last from the north, and generally in good condition. We have the finest peaches of the south, as fresh and perfect as from the next village, and they come cheap to our people. When no sale can be effected in our market, they go to another. Without the rapid transportation of steam, this could not be done; the fruit would spoil. Gardens, a hundred miles distant, are as good as those of ten miles only.

Judge Van Wyck hoped that we should obtain the statistics, showing the increase of amount of railroads, and their work, for the last ten years.

Mr. Robinson proposed, as the subject for the next meeting—soiling and the best plants for it. Adopted.

The Club adjourned to Tuesday, the second of August next, at noon.

H. MEIGS, *Secretary.*

August 2, 1853.

Present—Messrs. George B. Rapelye, Dr. Wellington, Messrs. Scott, Judd, Lawton of New-Rochelle, Stebbins of Brooklyn, Consul Tinelli, Howe, Judge Van Wyck, and others—20 in all. Henry Meigs, Secretary. Mr. Rapelje in the chair.

The Secretary read the following papers prepared by him:

AGRICULTURE AND TEMPERANCE, JULY 4, 1788.

On that day, in celebration of the adoption of the Constitution, eighty-eight divisions, civil and military, with their works in operation, enjoyed the festival of the birth of our Republican Government, in the city of Philadelphia. Seventeen thousand citizens were in the procession and spectators. At dinner, American porter, beer and cider were the only liquors drank.

Frank Hopkinson, of happy memory, wrote on the 9th of the same July, that he hoped a monument would be erected on the green with this inscription on it:

"*In honor of American Beer and Cider.*—It is hereby recorded for the information of strangers and posterity, that 17,000 persons assembled on this green on the 4th of July, 1788, to celebrate the establishment of the Constitution of the United States, and that they separated at an early hour without intoxication or a single quarrel. They drank nothing but beer and cider. Learn, reader, to prize those invaluable federal liquors, and to consider them as the companions of those virtues that can alone make our country free and respectable. Learn, likewise, to despise spirituous liquors as anti-federal, and to consider them as the companion of

all those vices that are calculated to dishonor and enslave our country."

When the rear of the line of the procession had arrived at the green at the foot of Bush Hill, at about half-past 12 o'clock, noon, the orator of the day, James Wilson, opened his address. It is excellent, but we merely take from it the agriculture. Speaking of the arts of peace as demanding our whole strength as soon as it can be spared, he said:—"Of these the first is agriculture, and this is true in all countries. In the United States its truth is of peculiar importance. The subsistence of man, the materials of manufactures, the articles of commerce, all spring originally from the soil. On agriculture, therefore, the wealth of nations is founded. Whether we consult the observations that reason will suggest, or attend to the information that history will give, we shall in each case be satisfied of the influence of government, good or bad, upon the state of agriculture. Where there is no security for property, there is no encouragement to industry; without industry, the richer the soil the more it abounds in weeds. Industry appears next among the virtues of a good citizen. Idleness is the nurse of villains. The industrious constitute the nation's strength.

What an enrapturing prospect opens on the United States! Placid husbandry walks in front, attended by the *venerable plough!* &c. Peace, liberty, virtue, religion, go hand-in-hand harmoniously, protecting, enlivening, exalting all! Happy country! may thy happiness be perpetual!"

[From the London Farmers' Magazine of July 1853.]

From Alfred Hall Fredinnick, of the Imperial Russian Geographical Society, and Gardener to his Excellency General Alexander Vroolodjsky, at Tchernoy Rinoke, near Kislau.

OIL OF TOBACCO SEED

Is found to be extremely limpid, and possesses the drying quality to a much higher degree than any other oil known to me. It is of great value to painters and varnish makers. Reduce the seed to powder, knead it into a stiff paste with sufficient hot water, then submit it to a strong press. It yields about fifteen per cent. of its weight.

Mr. Meigs—The seeds of tobacco are extremely small, but the number of them on one plant is immense.

[From the Magazine.]

DISSOLVED BONES.

There is every appearance that the supply of Peruvian guano will be inadequate to the demand, although a number of cargoes are on their way, but too late for our turnip crop. The Peruvian Government wisely keeps the price down, that higher prices may not stimulate scientific men and manure-makers to find substitutes for guano. Of all the various portable manures with which we are acquainted, superphosphate of lime is, after guano, by far the most important to the turnip crop, and it is every successive year used in greatly increased quantities. It is composed of sulphuric acid and phosphate of lime, and is made from a number of substances, the principal of which are bones, bone ashes, animal charcoal, Saldanha bay guano, coprolites, fossil bones, and mineral phosphates from Spain and the United States.

There is nothing to hinder farmers from preparing superphosphate of lime for themselves. By doing so, they are sure of the quality and a cheaper rate. To our agricultural friends we say now, more earnestly than ever, take care what you buy under the name of guano; deal only with merchants of undoubted respectability.

We now give Prof. Way's instructions for making the superphosphate of lime. A pair of substantial water-tight tubs may be got by cutting a large barrel across the middle. Into these the bones (the more finely ground the better) are put by weight. The tubs may be filled with bones to within fifteen inches of the brim; moisten the bones with fully one-fifth their weight of hot water from the rose of a watering can, turning the bones over carefully, so that they may all be equally saturated with the hot water. As soon as this is done, add the sulphuric acid in quantity of from forty to forty-five per cent. of the weight of the bones. The acid must be very cautiously put over the bones, to avoid danger to the hands and clothes. As soon as practicable, stir up the bones with a fork, to make sure that all the bones come in

contact with the acid. In doing this, stand to the windward of the tub, to lessen danger from the effervescing liquid. After the bones have been carefully turned over, the tub may be covered by an old cloth to preserve the heat, and left twenty-four hours, by which time the process should be complete. If raw bones are used, instead of such as have been boiled for the purpose of extracting the fatty matter and gelatine, ten per cent. less of the acid will be sufficient. Oil of vitriol is commonly used, but brown acid is more economical. The strength of oil of vitriol and the brown acid is known by their specific gravity, which Prof. Way calculates to be as 1.7 to 1 of water. If brown acid is used, it must be about one-fourth part more in quantity than the oil of vitriol. For the purpose of sowing the superphosphate, any dry absorbent substance which does not contain much carbonate of lime, (chalk,) will do for mixing with the superphosphate after it has been a day or two in the tub. A layer of ashes, or dry saw-dust, may be laid six inches deep on the floor beside the tubs; on this put a layer of the superphosphate with a spade, and so layer on layer till the superphosphate is exhausted. Then slice down the heap with a spade, a little at a time, then thoroughly mix with an iron rake. Repeat this mixing, adding, if necessary, the ashes or saw-dust, until the whole is in a fit condition for sowing. One ton of the bones may be regarded as equal to 2800 weight of guano of Peru. When the bones are prepared for light land, use a less proportion of acid.

FOREIGN STOCK IMPORTED.

The Farmers' Magazine says, that Mr. Noel Becar, of New-York, has paid 150 guineas for a yearling heifer—deservedly called "Beauty"—and also on behalf of himself and Col. Morris, president of the New-York Agricultural Society, several other very superior specimens from some of our most celebrated herds.

The ship Crown, for Philadelphia, takes out fifty head of the choicest specimens of short horned cattle, which could be bought in old England; several of them at prices which may appear incredible, as no ship was ever freighted with anything like so valuable a cargo of this description. For two animals only, one

of two years old, and a yearling bull, named the Dutchess of Athol, and second Duke of Athol, price 525*l.* or $2,600.

Judge Van Wyck observed that Prof. Way, an eminent agricultural chemist of England, has, as appears by one of the latest Farmer's Magazine and Monthly Journal, of London, pointed out the best way for farmers, dissolving their own bones, or such as they collected and purchased themselves, to make the best and cheapest superphosphate of lime. The Professor describes correctly, and in plain clear language, every material necessary for the farmer to have, and the proper way of using it to effect the operation. This appears in one of the extracts the Secretary has read to us. The Professor says that the farmer, by strictly pursuing his directions, will not only get the best article for use, but the cheapest, two important objects for the farmer to gain in preparing and making manures. There is no mystery about it, no learned or scientific words to lead the plainest and simplest man astray, or puzzle him about their meaning. All he has to do is to use a little judgment in selecting his articles, with due regard to time and quantity of each in their use. Alexander H. Main, of Mid Lothian, Scotland, in one of the extracts, gives much useful information in various experiments he made with special manures of several kinds. The Lothians are considered the garden and granary of Scotland; parts of them lie both near Edinburgh and Glasgow, and have the advantage of manures and markets of both these great cities. The soil will compare with any section of the three kingdoms for richness, system of culture, and abundance of its products of every kind. Mr. Mann, of Mid Lothian, is considered one of the most enlightened practical farmers residing there, and much confidence is placed in his opinions as to farming. Of all the special, or as he calls them, light manures, for the grains and grasses, he gives the preference to the nitrogenous, such as nitrate of soda, or potash, saltpetre, as some call them, and nitrate of lime; for the turnip crop, lime, the phosphates, and home dung. As grains and grasses constitute by far the greater part of the products of a farm, the nitrates will be of most importance if special manures are to be used. They are

considerably cheaper than they used to be. They come in great quantities from hot, dry countries, like the East, and Peru, South America. They are shipped at Peru, it is said, at $2.25 per cwt. This would make them as cheap, and perhaps a little cheaper than guano. Mr. Main puts great dependence on our venerable friend, home dung. "No temptation," he says, "however ingeniously displayed, should induce the farmer to lessen his appreciation of this invaluable fertilizer. Aid by all means, but never discharge or distrust it." Even its bulk and weight, so much dreaded by some, has a beneficent effect on soils; it seems to keep everything straight, supplies the soil in what it is deficient, "and its chemical and mechanical benefits on it, benefits all the succeeding crops of a rotation."

By the Secretary:

*First species—Apatite, or Mineral Bone Earth,**

Has but one axis, rhomboidal cleavage, specific gravity 3.1 to 3.2. There are three sub-species of it, viz:—the Foliated apatite the Conchoidal apatite, and the Lamellar apatite.

External Characters.—The most frequent color of it is white; from a greenish white it passes into mountain green, celandine (Chelidonia and swallow wort) green, light green, emerald green, and olive green. It owns also red and blue, sometimes of a pale wine yellow, and of a yellowish brown. Often several of these colors occur in the same piece of apatite. It sometimes appears massive, and in others disseminated, also in separate concretions, and sometimes thin straight plates, or lamellar, generally crystalized. In that case, its secondary figures are the six-sided prism and six-sided table, variously modified by truncations, bevels and acuminations. The crystals are small, very small, and middle sized; occur sometimes single, but many irregularly placed on each other; the side planes seldom smooth, but the truncations and acuminations are smooth; externally it is shining, internally glistening; the lustre is resinous, translucent, seldom transparent,

* Apatite, from *apatao,* to deceive, it being easily mistaken for others.—[From the Mineralogy of New-York.]

brittle, easily broken; becomes electric by heating, or by being rubbed with woolen cloth.

Chemical Character.—When thrown on live coals of fire, it gives out a pale, grass green, phosphoric light. It dissolves very slowly in nitric acid, and no effervescence. It is constituted of

Lime,	55	parts.
Phosphoric acid, and a little trace of manganese,	45	do

Second species.

Lime,	53.75	parts.
Phosphoric acid,	46.25	do

It is found imbedded in granite at Baltimore, in gneiss at Germantown, in mica slate in West Greenland.

Third, sub-species.

Phosphorite; color yellowish white; sometimes near a grayish white, sometimes spotted like pale ochre, yellow and yellowish brown; is found massive, as well as in distinct concretions.

Lime,	59	parts.
Phosphoric acid,	34	do
Silica,	2	do
Fluoric acid,	2.5	do
Muriatic acid,	0.5	do
Carbonic acid,	1	do
Oxide of iron,	1	do

It is found in crusts, and crystalized along with apatite and quartz, at Schlackenwald, in Bohemia, but most abundantly near Seigrosan, in Estremadura, Spain; sometimes associated with apatite, and forms whole beds, which alternate with limestone and quartz.

Some of the apatite is found mixed with iron pyrites at St. Anthony's Nose, on the River Hudson, and in granite at Milford Hills, New-Haven, Conn., and at Topsham, in the State of Maine.

Judge Van Wyck—The following extracts are from the last Journal of Agriculture and the Transactions," &c., Scotland, July, 1853.

EXPERIMENTS WITH SPECIAL MANURES, BY ALEX. H. MAIN, MID-LOTHIAN.

Mr. Main received from the society a premium of twenty sovereigns ($100) for his trouble and labor of making experiments, and the handsome account given of them.

"The application of special manures is now recognised as a principle in farming. Their scientific, practical, and economic value as fertilizers, is fully appreciated, and the part they have acted in the rapid advance of agriculture is understood and universally admitted. To aid a more thorough comprehension of their use, and to assist the determination of their comparative value, were the objects I had in view when I undertook the following experiments in 1849.

"Before producing the tables of results, I shall simply premise that the experiments were conducted with all the care that a strictly personal attendance could secure; the manures were all purchased from dealers of respectability, and accuracy in the determination of the results and in stating them plainly, has at least been honestly attempted."

The remarks and tables follow, which occupy many pages of the Journal, and would well repay the reader for a careful perusal of most of them. I shall only here make extracts from the remarks of Mr. Main on a few of the experiments, as alphabetically arranged in his tables.

Remarks and Observations.

"The great practical questions," he observes, "affecting top dressing, are its effects on produce and profit. A reference to the tabulated results of the experiments under review, exhibits these effects favorably. It is not too much to calculate an average increase from the use of top dressing to grain crops of one fifth on a crop, which, undressed, will yield forty bushels per acre. The average of the crops in these experiments, shows a much higher rate of increase, than has now been assumed. But, taking the increase at a rate of eight bushels per acre, and, assuming that to secure this result, an expenditure of 16*s*. per acre for light manures is necessary, it is obvious, that, taking oats at 20*s*. per quartea—a fair profit, independent of straw, is obtained. This calculation is extremely moderate. For many instances I have found the crop increased by top dressing, at least one third, and in scarcely one instance have I found the expenditure of 16*s*. per acre, on a good top dressing, leave less in cost than two-thirds of its original cost. Apart from the continued effects of light manures in a direct or positive sense, they really result in these effects in an indirect, but scarcely less important way. Their use increases the supply of home manufactured manure, and by enabling the farmer to give this latter substance in larger quantility to his land, the foundation, by their instrumentality, is laid for permanent improvement. And while litter is supplied in greater abundance, so is food. Greater numbers of cattle are kept, and by the aid of oil cake or substances produced on the farm, a better quantity of home manure secured. Hence, while we supply nitrogen in the light manure, this again aids us in the manufacture of mineral substances, requisite to maintain unimpaired fertility. These facts are too much neglected by those who are still afraid to invest their capital in top dressings. Top dressing on grass, whether for hay, soiling, or pasture, is of immense advantage. A remarkable instance occurred in my own experience, three years since. A field of fifteen acres had been laid to grass for permanent pasture, some six years before. It is not naturally a grass soil—indeed the very reverse. For three years, however,

it yielded well, and kept a large amount of stock. In the fourth year it began to fail, the fifth was still worse, and on the sixth, it may be said, that twelve cows starved on it. In the seventh year it was top dressed, with 20 cwt. of nitrate of soda, in the month of April, and the results were astonishing. The stock pastured on it that year was thirteen milch cows, (two w th calves suckling,) five stirks, (young steers and heifers,) three colts, and, at intervals throughout the season, three score of sheep. I have continued to benefit by this experience. The manures best adapted for securing satisfactory results, may be determined by a reference to the tables; but, as a general principle, substances rich in nitrogen, are entitled to this distinction; their effects are peculiarly grateful to plants—I mean the grasses and cereals. During growth they remarkably distinguish the crop they are applied to. A dark, vigorous green; a strong, healthy plant, with a broad, wavy leaf, are almost their invariable characteristics, and they certainly yield a much handsomer return for outlay. From ten years experience in the use of light manures, I am strongly impressed with the conviction, that the rule of good and profitable farming, is, for grass and cereal crops, to use nitrogenous applications, and trust for the necessary supply of mineral constituents to lime, and to phosphates and home dung, applied to turnips.

The secretary read the following translation, made by him from the celebrated Maison Rustique, or Farm House of France. This work is deservedly distinguished as one of high utility, for its great care, industry, and amount of facts.

SOILING.

A term used instead of stall feeding, said one — a term, says Webster, meaning the supplying fresh cut, green food to cattle. Maison Rustique says, it improves the land more to soil the cattle than to pasture them; that they do little toward enriching the soil by pasturing; that soiling pays a notable part of the whole cost of feeding, by the additional product in manure. But in mountainous and marshy, swampy locations, pasturing is, without contradiction, the best plan. The ox is not contented like the horse and the sheep, with a small, fine scattering grass. The ox

laps up the feed with his tongue, conveys it to his grinders, so that the vegetable must be of some size over the horse and sheep bite. The ox bites off the upper part and the horse and sheep bite the shorter which is left. Therefore it is customary with some to put horses into the pasture, after the oxen have fed on it, and sheep after the horses, for they bite still closer to the ground. Cows do not want as rich pasture as cattle fattening, but they want good plants, and plenty, and no marsh. Such pastures are found in mountainous lands as well as in some low ones. The milk from the mountainous pastures is richest, and contains more cheese. Soiling is now extensively practiced in many countries, but not so much in France as it should be.

By soiling we have found that four cows, in twelve days, gave us 1,110 lbs. weight of milk, and consumed 6,144 lbs. weight of clover. This, then, gave us 23 lbs. 2 oz. of milk for 128 lbs. of clover.

Meadow grass is a resource for soiling to which we are obliged to have recourse sometimes. Lucerne, by its ready growth, considerable product, and its good quality, is one of the best for soiling purposes, but, unhappily, all soils are not equally suitable for its growth. It wants a deep soil, free from wet.

Common clover is next, but it bears but two cuttings. The Italian clover, the incarnatum, is good. In the fall, when clover falls off, we take to vetches, colza, white mustard, spurry, Indian corn, millet, when green; buckwheat in the flour. Sainfoin is capable of only one cut, and therefore is rarely used green. Beet leaves are used when of their largest size. Lentils, turnips, leaves of the cabbage turnip or cauli-rapa, all the cruciferous plants, ruta bagas, carrots. Some try pumpkins and squashes. I could mention a crowd of other plants which are gathered by the women and children of the farm in the woods, along the hedges and road sides, among the vineyards, &c. Green forage, for soiling, ought to be cut every day, morning and evening, and should be kept out of sunshine and rain. Mouldy clover has been deem-

ed dangerous to the health of cattle, but we think that is a vulgar error; still, it is not so good when heated in heaps, or wilted down by the sun. In feeding with green forage we must observe the following rules: the first cut, which is quite green and watery, must be given in small quantities at a time, and with dry hay or straw, well chopped up together, for unless you mix them, the cattle would pick out the green and leave all the dry. About three pounds weight of the dry hay or straw is enough for one ox. It is hard to make your people give the green forage in the proper small doses, but it is indispensable, and besides, they must not allow the cattle to drink immediately after the feeding; they ought to take their drink an hour before feeding. The cattle want their feed generally three times a day, and they take two hours at each meal, but we think it better to give them but two meals a day, and let them be at them three hours each. A cow will eat from 90 to 110 pounds weight of green forage a day if she is about 700 or 800 pounds weight. It is good to curry-comb them while they are about finishing their meal—it is hardly less useful to cattle than it is to horses; rubbing them all over with the hand is indispensable to cattle while fattening or working, or being brought up. It is not so necessary for cows, and in fact an energetic daily rubbing diminishes the milk and tends to fatten them. In summer bathing in river or pond is very salutary to cows and oxen, but there must be caution used in this, the water must not be too cold. An able hand can take care of fifteen to twenty milkers or fattening oxen."

After reading of the above a number of other papers of interest were read by the Secretary, the first of which was on "Agriculture and Temperance, July 4, 1788."

A splendid specimen of the blackberry was presented to the Society by Mr. Lawton, of New-Rochelle. Many of the berries were from three to four inches in circumference. A large basket of them were partaken of by the members, and their rich and luscious pulp was duly praised. Mr. Lawton named the fruit the "New-Rochelle blackberry," but on a vote of the Club, the

name has been changed to "the Lawton blackberry." A vote of thanks of the Club was also tendered to Mr. Lawton.

The following paper was read by Mr. Lawton:

THE BLACKBERRY,

To which I have before called the attention of the Club, has been cultivated in small quantities for several years in New-Rochelle, Westchester county, where I now reside. I have not been able to ascertain who first discovered the plant and brought it into garden culture, but am informed it was found on the road-side, and from thence introduced into the neighboring gardens. As it came to me without any name to distinguish it from the wild bramble, I beg leave to introduce it to the notice of the Club as the "New-Rochelle blackberry," and at the same time present as a specimen a few quarts of the fruit, gathered this morning, precisely as they came from the bushes without being selected. I have examined many works with a view to ascertain if there has ever been any improvement on the well known wild varieties, but without success. The double flowering, dwarf or dewberry, American upright, and the white fruited, are all that are named. The dewberry is the first to ripen, and the best flavored fruit. The white fruited seems to be cultivated as a novelty more than for the fruit The upright variety, fruits late in the season, is of vigorous growth, and under favorable circumstances produces large mulberry-shaped berries, but the seeds are not thickly bedded in the pulp, and are so abundant as to impair materially the quality of the fruit. This plant seems to adhere to its original character with singular tenacity, or from the many millions of plants which spring up from seeds annually distributed in almost every diversity of climate and soil, we should constantly find new varieties. Improving the wild plant by careful cultivation is one thing—to produce a new variety is another. The fruit now before you I believe to be of the last named character. It is not like the dewberry, or long and mulberry-shaped like the upright blackberry, and the seeds are so completely imbedded in a rich

pulp as hardly to be noticed, I think in shape and size they compare very well with the Hovey seedling strawberry.

The "New Rochelle Blackberry" sends up annually large and vigorous upright shoots with lateral branches, all of which, under common cultivation, will be crowded with fine fruit, a portion of which ripen daily in moist seasons for six weeks. My plants have ripened from the 20th to 30th July until 1st to 15th August. They are perfectly hardy, always thrifty and productive, and I have not found them liable to blight or injury by insects.

It will be many years before our citizens generally will be able to procure this fine fruit, as our large hotels and saloons will contract at high prices for all that can be sent to market. But numerous private gardens may be stocked for family use in three or four years, and in their turn aid in the distribution. Except that they are perfectly hardy and need no protection in winter, the cultivation may be the same as the Antwerp raspberry, but to produce berries of the largest size they should have a heavy damp soil and shade.

Judge Van Wyck said that many of the lessons of to-day will be useful to some of our farmers, being as they are the results of much experience and talent.

Mr. Judd, of the Agricultor, remarked that our farmers have, some of them, found it almost impossible to manage the dissolving of bones with acid, as the lessons are. My own experiments do but confirm their difficulty. Unless the bones are ground very fine, they dissolve slowly, leaving the coarse fragments of bone undissolved, or sometimes coated, and thus the inside very slow of solution. Proper mills for grinding the bones are very scarce, and when a farmer shall try, as I have, with a sledge hammer, to break the ox bones on a stone, will find it a little hazardous, as the pieces fly under the blow, and as the bones fresh are greasy, he may look for pieces a goodly distance off. I assorted the sizes as well as I could, putting them into three or four barrels separately; our barrels had iron hoops, so that when we added the sulphuric acid the hoops were soon corroded and the barrels burst. Some of our barrels with wooden hoops burst too. Some of the larger fragments of bone required six

or eight weeks to dissolve, so that the farmer lost the proper time to use them. The finer ground bones dissolved in three weeks. Dr. Whitcomb, of Connecticut, found ten weeks occupied in the solution ; he mixes the dissolved bone well with wood ashes, and the effect on his crops is very fine and profitable too ; his corn grows very green. Sixty pounds weight of sulphuric acid to one hundred pounds of bone in a dry condition. The acid costs but about 2½ cents a pound. One gentleman of my acquaintance has a good method. He keeps a large hogshead, into which he throws bones and acid from time to time, being thus always ready for use. It is certainly best and cheapest for farmers to dissolve them at home rather than get them from abroad, because they will be sure of having the real article at the least cost.

Consul Tinelli—The city of Hull, in England, imports a vast number of cargoes of bone. There will be a scarcity ere long.

The Secretary reminded the Club of the lesson of antiquity as to the value of bone as a fertilizer. Columella's method of planting a vineyard, putting broken bones at the bottom of the trench, and especially skulls, as those bones were more porous and more immediately useful to the roots of the plants. The trenches three feet deep, &c. Science is already loudly appealed to for chemical discoveries, geological finding, &c. Mineral substances to supply the place of bone and guano, may be expected, but as yet the discoveries of bone earth (*apatite*), do not promise anything like a supply.

The soup made of the *Cajanus flavus*, or pigeon pea, was served, and was much relished by members. The peas were presented by Mr. Andrew Archbald, of Glen Cove, Long Island, from their family plantation in Porto Rico.

The following statement by Mr. Archbald, was read:

Glen Cove, August 1, 1853.

Dear Sir—Since I last had the honor of addressing you upon the subject of the pigeon pea, I have been enabled to obtain some more information with regard to the Cajanus flavus, which may be

of some interest to the club. There are two species of pigeon pea growing in the West Indies, the Cajanus flavus, and Cytisus pseudo-capan Jacquin. Those two differ in the color of the corolla, marking of the peas, and pods in the fineness of the leaves; in the Cajanus flavus, (common pigeon pea, specimens of which are before the club,) the corolla is yellow, pods and peas not spotted, and leaves of a finer texture; those in the other species, the flower of Cajanus bicolor streaked with crimson, peas spotted with purple, and pods marbled with dark streaks, and leaves of not quite so fine a texture as in the former species. The color of the peas of this species varies very much, some having been seen entirely purple; this is called the painted pea. The Cajanus flavus is generally considered the best for the table, as being much richer than the Cajanus bicolor.

Yours, very respectfully,

ANDREW ARCHBALD.

HENRY MEIGS, Esq.

P. S.—It will not be possible to form a correct judgment of the peas from the dried specimens.

Henry Steele, of Jersey City, presented branches of green gages from his trees, in a remarkably fine condition. Worms had suddenly appeared in the trees in countless numbers. Mr. Steele dissolved one pint of whale oil soap in about three gallons of water, and with it he had his trees syringed thoroughly. The ground under the trees was soon covered with the fallen worms, and thousands hung suspended by their webs. These he swept off with brooms, destroyed them, and the fruit is now most abundant, and in the best condition. Mr. Steele exhibited one of his Washington plums, of noble size.

On motion, the thanks of the club were unanimously voted to Mr. Archbald for the Cajanus, and to Mr. Lawton for the unequalled blackberry, which, on motion, was named by the club the Lawton Blackberry.

Seeds of the Alfalfa, or Peruvian Clover, sent to the club by the Hon. Charles Mason, Commissioner of Patents of the U. S., were distributed among members. Some have been given to the

Rev. Mr. Leacock, Jr., of the Island of Barbadoes, with the hope that it may supply that very populous and fine island with a food for cattle and horses very much wanted, for they are deficient in the grasses. The Rev. gentleman stated that the pigeon pea is there largely used as a nutritious and wholesome food; that it is there a perennial, growing some eight feet high, abundant bearer, so much so, that a very few *pea trees* suffice for one family.

Mr. Van Zandt, of Flatbush, Long Island, presented a box containing one of the celebrated Locust Borers, so destructive of that most valuable tree. For the best account of this enemy, we refer all our readers to the valuable work of Prof. Harris, of Harvard University, on the Insects of the United States.

On motion, the subject of Soiling, and the best plants for it, was ordered to be continued at the next meeting. Mr. Bell, of Morrisania, is expected to attend and give the benefit of his long experience in the keeping of cattle and other stock.

The club adjourned to Tuesday, the 16th of August, at noon.

H. MEIGS, *Secretary.*

August 16, 1853.

Present—Messrs. Mapes, Lawton, Bell, Smith, Scott, Van Wyck, Judd, and others—16 in all.

William Lawton, of New-Rochelle, in the chair.

Henry Meigs, Secretary.

The following letter from Frederick Prime, relative to the origin of the large blackberry of New-Rochelle, was read:

To the President of the Farmers' Club:

Sir—In a late number of the Westchester News, published in this town, I have found an interesting paper, read before you society by Mr. Lawton, in relation to a remarkable blackberry, which for some years has been known in this neighborhood.

As the article gives only a general account of the origin of this plant, I have supposed a more particular statement might be of interest to the Farmers' Club.

About the year 1834, Lewis A. Seacor, a carpenter, then and now residing in the village of New-Rochelle, in walking over a field, between my residence and the Sound, discovered a blackberry of a remarkable size, and having obtained permission to remove some plants for cultivation, placed them in his garden—about eighteen.

After careful inquiry in this neighborhood, I am satisfied that it is to Mr. Seacor we owe the preservation of this remarkable and valuable fruit, and that all the plants now known had their origin from his.

A relative of a former proprietor brought with him from England, many years since, some shrubbery, whence it has been supposed the blackberry in question was introduced. This is a mere conjecture, the probability of which could be easily ascertained by comparing this with the English varieties. The generally received opinion in this neighborhood is that it is a seedling of native origin.

I am informed by Mr. Seacor that he has called it the "mammoth blackberry," and has sold it under that name.

Should any new name be given, it appears to me that of the "Seacor Mammoth Blackberry," or the "New-Rochelle Seacor Blackberry," would be but an act of justice to the person who has preserved the fruit, and might prove of advantage to him, as he continues to raise them for sale. He is a working mechanic, and the few dollars he receives from the sale of his plants are of importance to the comfort of his family.

The plants were removed by Mr. Seacor before I purchased the property, and I regret that, from my ignorance of their existence, the parent stocks were destroyed in clearing the lot where they grew.

Yours truly, &c.,

FREDERICK PRIME.

New-Rochelle, Westchester Co., N. Y., Aug. 7, 1853.

Mr. Lawton is unable to say whether Mr. Seacor is the first discoverer or not.

Prof. Mapes moved that Mr. Prime's letter be placed on file Carried.

FLOWERING OF PLANTS.

[Extracts by H. Meigs,]

Berghaus says that in the middle latitudes of Europe and North America, the flowering takes place generally four days later for each degree of latitude towards the north.

How was the earth originally clothed with plants? Various hypotheses have been advanced. Linnæus supposed that at first there was only one primitive centre of vegetation, from which plants are distributed over the globe. Some, to save all trouble, suppose that plants were produced at first in the localities where they are now seen growing. Others think that each species of plant originated in, and was diffused from, a single primitive centre, and that there were numerous such centres situated in different parts of the world, each centre being the seat of a particular number of species.

Daubeny says that analogy favors the supposition that each species of plant was originally formed in some particular locality, from whence it spread itself over a certain area gradually, like the origin of man from Adam and Eve, that the spread of vegetation still goes on as it began, from place to place, island to island, &c. The remarkable limitation of certain species to single spots on the globe, seems to favor the hypothesis of specific centres. Professor Forbes says that many plants peculiar to the Flora of the west of Ireland have the nearest portion of their specific centres in the north-west of Spain. Others of the south-west promontory of England are found in the Channel islands, and on the opposite coast of France. The vegetation of the south-east of England is that of the opposite continent.

Watson and Forbes conclude that as England does not contain more than one vegetable, the Eriocaulon Septangulare, that is not

found on the coast of Europe, England cannot be deemed a centre of vegetation.

The Chairman called up the question of the day, viz:

SOILING OF CATTLE, AND THE BEST PLANS FOR IT.

Thomas Bell, of Morrisania, who has had very long and extensive experience in this business, was invited to give his opinion; and he said, he had been engaged in agricultural pursuits, especially with cattle, for thirty-five years. I was soiling cattle in Scotland when I left it. I was supplying my cattle in that way, the year round with grass, roots, &c. Much depends upon the character of the land we have to deal with. On rocky, uneven, mountainous grounds, we are compelled to graze cattle.

I have soiled from one hundred to one hundred and fifty head on 400 acres, at Fordham, near this city. I set aside ten acres of the best land, ploughed it not less than eight inches deep. Others may go deeper than that, and I shall approve it. I sowed Indian corn on it, broadcast. I had manured it with twenty-five cart loads an acre of my barn-yard manure in April, and when spread it covered the whole surface. I ploughed it all in. That field had produced a crop of potatoes the year before. I took yellow northern corn and sowed four bushels of it, broadcast. On one acre, on the first of May, I sowed it, in going three times over the field, up and down. I then ploughed the field with my one-horse plough, which I call my corn plough, about four inches deep. I then run a light roller over the field.

On the 10th of May I served one acre more in the same way. On the 20th of May another acre. On the 30th of May another— that made four sowings of corn in May.

On the 10th of June one acre more in same way, and an acre each on the 20th and 30th of June.

On the 10th, 20th and 30th of July each an acre in same way.

On the 15th of July I commenced with the first of May acre, on which the corn averaged about four feet high, and in silk. I cut daily all that was wanted by my cattle, (one hundred of them)

and it lasted till the 15th of August. I gave meal along with the corn stalks. The soiling yard was about an acre in size, The cattle had free access to pure wholesome water, just as much as they pleased. They went in and out of the adjoining stables, and that exercise seemed to be as much as they wanted, for they were perfectly healthy.

From the 15th of August to the 25th the corn cut was of a stronger growth than the first. My hundred head were kept three months in this way. I saved much in the article of manure. If I had made tanks to save all the urine of my cattle, I should have made more profit. This way of soiling renders interior fences unnecessery on a farm, and it is a large expense saved. On our farms, in England, we sprinkle the manure over the growing crop with a thin sprinkler, like those with which we here water the streets. That would not answer in a dry time—it would prove too strong for the crop. I can get as much milk by pasturing as by soiling. The corn feed made the richest milk, and some say the richest butter.

I sent daily to market from ten to twelve hundred quarts of milk. Sometimes my number of cows was one hundred and fifty. The old Shakeress cow is still alive; she is about eighteen years. You have heard me say how I came by her. I repeat it. One day I met with a Shaking Quaker from Lebanon, who said to me: "Friend Bell, do'st thee want a good cow?" I said, "yes." "Well," says the Shaker, "I have a good one for thee, if thou wilt give me sixty dollars for her." "That's a high price," said I. "Well," replied the Shaker, "she will give thee a bushel of milk a day," (thirty-two quarts) I gave sixty dollars and took the Shakeress, who sometimes gave me thirty-two quarts a day, and the average for a whole year fifteen quarts a day. She paid me well. I had another, which some of the members present saw on my farm—one I called the Old Judge. She was American with a cross of the Devon. She never gave me more than thirty quarts a day, but she gave it longer. My experience has been profitable.

Professor Mapes—Our valued friend Mr. Bell has occupied nearly all the ground. I give—as I am requested to do so—my

experience in soiling. I have confined my cows in a clean stable—fastened to a pole and cut their feed for them. I was told they would suffer for want of exercise. I have not found that to be true. It is true that their flesh and yield of milk are both diminished by much exercise. Cattle are less exposed to accidents than when pastured—so are they protected from storms, the calves are better taken care of, their manure—especially the fluid portion, is all saved—it should be mixed with muck and other solid manures, while yet warm, when it has not lost by chemical change—far better than pumping it out of the cistern after a week. We add to the manure all the wash of the house. When the manure is not sufficiently wet we pump water upon it. When the urine is put on warm from the cattle it decomposes ten times as much muck as it does when cold. Great labor is saved in soiling. I have found much advantage in using liquid manure. On one occasion I saved a pea crop by it—it is well to throw in a little diluted sulphuric acid. My manure is in little danger of fire fanging. My cattle are more protected from flies in the stall. They are kept cooler in summer than in winter. The cows give more milk, and they keep better health than cows in pasture. In the pasture they get but one sort of food—in soiling a variety, which, if judiciously served to them, is more agreeable and useful. When they are scouring from too much green feed I give them carrots, the peptic acid of which invariably cures them, and gives them aid in digestion. I give among other roots, the Vienna Cauli-Rapa, (cabbage turnip,) which is very superior. Vilmorin has introduced a hybrid of the turnip and the cauliflower. For green food, in the season for it, our Indian corn is excellent, as shown by Mr. Bell. I prefer Stowell's evergreen corn to any other for that purpose. It grows larger, the stalk is almost as sweet as sugar cane, the joints (which in other Indian corn are hard) are in this corn quite tender, a man can eat it, and it gives a double quantity on an acre. The juice of it has been tried, and is up to eleven degrees Beaumais—equal to the juice of Santa Cruz cane.

Soiling saves interior fencing, and it is a great saving when not only the cost of the fewer repairs are stated, but of the ground on both sides of the fences which cannot be cultivated for some dis-

tance from the fences. The stables, in soiling, must be kept clean and well ventilated, of course—or the cattle must be turned out for exercise in time. I have no occasion to turn them out. I have mentioned the carrot; it has a value far beyond that of a mere food; it contains peptic acid of excellent use in digestion; it is now used in making jellies; it is a cow doctor, and always cures. One bushel of oats, and another of carrots, are fully equal in value to two bushels of oats. The excretia of the cattle fed with carrots do not contain undigested oats, corn or hay or what else; they almost resemble those of a healthy man. I have found the strap-leaved red top turnips good in soiling; it can be profitably raised, planted at any time, stand out the winter—get pithy before spring. Rutabagas stand out in winter, and do much good to the soil as a mulch. In spring I pass a roller over them all to crush them, and then plough them in—little additional expense. Mr. Campbell cooks the feed, and gains by it. I cut my Stowell ever green corn stalks, put them in a vessel with a little salt, pour hot water on them, cover them up with a cloth, and when cool they make a very acceptable food.

Judge Van Wyck—On small farms, near large cities, it may be cheapest, even in our country, to soil our cattle. Such farms rarely have much stock on them; they want their land generally, or most of it, for garden vegetables, fruit, poultry, &c., to raise feed for the last, as well as their other animals. On large farms of from 200 to 400 or 500 acres, situated in the interior, some distance from the market, it appears to me it would be more profitable and convenient for farmers to graze their stock, as well that which they require for the dairy, as for fattening and working. As far as my experience and information go, the cost of labor in such a system would not be more than one-fourth or one-fifth of what it would be in soiling. The raising of crops in succession on distant lots of a large farm, whether the corn plant, or any other, and carrying and distributing it for feeding would cost three times as much, and probably more, than letting the animals run at large, choosing their own feed, drink running water, and have exercise and pure air. This, it appears to me, would be more for the profit of the owner as well as the health and thrift of his animals. Grazing farms, as well as any other, must be well

managed to do well; this as regards tillage of every kind—ploughing, hoeing, clearing, manuring, and the use of the best grasses, with frequent and judicious changes of feeding grounds. Why soiling is so much more practiced in Europe than here, is the dense population there, and the scarcity of land; they want the latter to raise food on for the former. Notwithstanding this, we have it from the best authorities—that in Holland, possessing a small territory but a very dense population; they graze their cattle, and especially their cows, from April to November. Their dairy system is generally allowed to be the best in Europe, and this in quantity and quality of product; her butter and cheese will command in any European market, and at all times, from ten to twenty per cent more than any other. Mr. Bell admits, that on rough, hilly farms, even near the city, it would be better to graze cows as well as other stock, than to soil them, whether the farms be large or small. Of course on large, hilly, uneven farms, located any distance in the interior, the inducements for grazing must be much stronger. Mr. Bell gave Long Island and some parts of New-Jersey as proper specimens of surface for soiling. No doubt localities in both these sections, and especially the former, might be made much more productive by that system than they are at present. It is not only the adoption of the system, but it must be properly persevered in to succeed. Good tillage, high manuring, proper keeping of the stock as regards yards, feeding, water, cleanness, taking care of the manure—this last constitutes a considerable portion of the gain. Mr. Bell admitted, that his farm being large, he grazed his cows a part of the season; he spoke highly though, of the advantages of soiling in certain localities.

Mr. Judd of the Agricultor—According to the experience of a man in Holland, it seems that soiling was not so profitable as is here stated. Stephen's book on the farm says, it is about as to land as two to one; but by Mr. Bell's experience is, making ten acres answer for fifty acres of grazing.

Mr. Bell—If you mean to say that the soiling was with clover, you are right; but not with corn as I use it.

Mr. Judd—It is said that twelve cows require one man.

Mr. Bell—I found one fit man could take care of twenty-five cows.

Mr. Judd—Men are expensive. One hundred dollars paid to a man will go further in hiring pasture than in soiling. The making of manure depends much on a man's location; most farmers have no muck at all, and little litter.

Prof. Mapes—Where there is no muck there is soil, and let that take the place of muck and absorb all the extra fluid of the cattle.

Mr. Judd—The strongest point for pasture is the cheapness of rent in most places.

Prof. Mapes—I pay, near my farm for pasture, thirty dollars an acre on land worth five hundred dollars. It is but the interest of the value of the land.

Judge Van Wyck—Knows land four miles from New-York, which lets for two and a half to five dollars an acre per month.

Mr. Bell—My interest paid on 400 acres was two dollars an acre per annum. The owner of the land did pretty well by it, and I did better still. Cattle travel far in the pasture, and lessen both their flesh and their milk. On pasture, the difference of feed is considerable. I found it amounted to one hundred and fifty quarts less, on some portions of the pasture than others, in a day.

Mr. Lawton presented to the Club, for refreshment, a basket of his great blackberries—enough for all.

Mr. Judd proposed as the next subject: The top dressing of crops. Seconded by Prof. Mapes, and carried.

The Club then adjourned to the first Tuesday in September, at noon.

H. Meigs, *Secretary*.

September 6, 1853.

Present—Prof. Mapes, Dr. Enderlin, Messrs. Scott, George B. Rapelye, Consul Tinelli, William Lawton, of New-Rochelle, Solon Robinson, General Chandler, Judge Van Wyck, John W. Chambers, and others—19 members in all.

William Lawton, of New-Rochelle, in the chair.

Henry Meigs, Secretary.

The Secretary read the following papers translated and prepared by him :

ORIGIN OF PLANTS, &c.

By Prof. Schleiden, of the University of Jena, at Saxe Weimar, Germany. [This University was founded in the seventeenth century, is celebrated, has twenty-eight ordinary and nineteen extraordinary professors, a library of 100,000 volumes, &c.; it saw the great battle in 1806, when Napoleon totally defeated the Prussian army.]

Our careful culture is confined to a certain relatively small number of vegetables, and the selection of these left to accident in early times, but now not unfrequently conducted with knowledge according to definite principles. Our cultivated plants exhibit characters which they do not possess in their wild state. The sweet, juicy, Altringham carrot, weighing from five to six pounds, is, in a wild condition, a dry, slender root, unfit to eat. The delicate, well-flavored Vienna Glass Cauli Rapa, as large as a man's fist, is (when wild) a slender, woody, dry stem. The cauliflower, in its natural locality, is a thin, branched, flowering stem, with little, green, bitter flower buds.

Ancient trees compared with modern.

All the city of Hamburgh, with its harbor and a broad tract of land towards the south-east and the north-west of the city, rests upon a sunken forest, buried from thirty to one hundred feet below the surface. This forest consisted of oaks and lime trees, exactly like those now growing on the surface over the forest. Excavations have brought to light thousands of hazel nuts, which differ in no respect from our hazel nuts of the present day.

Some plants retain exactly the most minute characteristics, under the most diverse condition. Others readily run into innumerable varieties. Some, after being greatly altered by cultiva-

tion, readily run back to their original wild state. Others, after years of cultivation, can be then propagated from their seeds, and so give a sub-species.

The Cereus of Mexico.

A tall, columnar species of the cactus, the old dead stems of which, after the decay of the grey-green rind, remain erect, their white wood firm, as it is light, stands ghost-like among the living stems, until some benighted traveller seizes it in that scanty wooded region to make a fire to protect him from the musquitoes, or to bake his corn cake, or to light up the dark tropical night. On this account they have obtained the name of torch-thistles. They are carried on mules to the heights of the Cordilleras, to serve as beams, posts and door-sills in the houses. This is so at Antisana, which is probably the highest inhabited spot in the world, being 12,604 feet above the level of the ocean.

The little daisy exhibits a sort of wilfulness; while we in Europe tread it down in our meadows as an insignificant weed, it is not to be found in all North America, except carefully raised in gardens.

The banana was perhaps the earliest gift of nature to man awakening into life; and not only the first, but the most valuable of her gifts. The same space of ground which yields one thousand pounds weight of potatoes, will yield forty-four thousand pounds weight of bananas.

Xanthorrhea Australis, of New-Holland or Australia.

On a broad sandy plain we find some places decked with this wonderful grass tree. Their trunks are several feet high, and bear on their summits a branch of gigantic grass, from the middle of which the shaft bearing the spike of flowers rises from fourteen to twenty feet high. Here I found a solitary daisy!

The cradle of the human race probably was in a warm, half-tropical climate, shaded by the broad leaves of the banana, plantain, and the delicate feathery leaves of the date-palm. What the first fruit of man was we know not, but he seems to have

used these at a very early period, since neither of them, from the oldest time of which we have any record, have appeared in the condition in which they came from the hand of nature, but are essentially altered by human cultivation. The wild banana is a small, ill-flavored fruit, filled with numerous seeds; the cultivated plant, on the contrary, contains no fertile seeds in its delicious substance. Its maintenance, its multiplication, are wholly dependent on the activity of man, who propagates it only by cuttings.

A striking phenomenon, indicating the great antiquity of the use of grain, is, that in spite of the most profound investigations, we have not discovered the proper native country of the most important cereals. No one of our industrious travellers in America ever found Indian corn wild.

China has been so thoroughly cultivated, that every useless wild plant has been extirpated, and the land is clothed entirely with plants intentionally raised, except a few water plants in the purposely flooded rice fields.

The oldest grain used by man is, doubtless, wheat and spelt. Homer mentions them as bread-corn and barley, with which Homer's heroes foddered their horses, as the people of Southern Europe do now. In the time of Galen rye was introduced into Greece, by way of Thrace; various kinds of oats were cultivated in Greece, but only as green feed for fodder. Subsequently, oats were cultivated in Germany—apparently borrowed from the East—from whence also Germany obtained her rye. According to the usual opinion, maize (Indian corn) was wholly introduced into the old world from America. Yet there is testimony that makes it probable that as early as the period of Theophrastus, (2,100 years ago) it was known in the East Indies—and at all events that Eastern Europe had obtained it from the East! What we have said of the antiquity of our corn plants, holds good for most of our kitchen vegetables and fruits, except the potato only.

Our European artichoke was carried to South America on the plains of the Rio de la Plata and Uraguay, and now clothes immeasurable tracts of land.

Two thousand years ago not a grape or a cherry would ripen, where now the Johannisberg and Rudesheim flourish.

But countries now deserted mark the track of man, by bearing what Botanists call rubbish plants, such as thorns, thistles and others. A broad band of waste follows the steps of cultivation. Before him lay original nature in her wild sublime beauty. Behind him he leaves the desert, a deformed, a ruined land, acting on the abominable principle of one who said, "*apres nous le deluge*"—after me the deluge! The nobler of the races of men even now raise their warning voices, and put their small hands to the mighty work of reforming, by restoring to nature her strength and fullness.

THE INDIAN'S IDEA OF INDIAN CORN.

Crevecœur, the old French traveller in America, thus relates the idea of the Indian chief of the tribe of the Missisais. He said to his people: "Do you not see the whites living upon seeds, while we eat flesh? That the flesh requires more than thirty moons to grow up, and is then often scarce! That each of the wonderful seeds they sow in the earth returns them an hundred fold. (Indian corn returns a thousand—Meigs.) That the flesh on which we subsist has four legs to escape from us, while we have but two to pursue and capture it. That the grain remains where the white man sows it, and grows. That winter with us is the time for laborious hunting—to them a period of rest. For these reasons they have so many children, and live longer than we do. I say, therefore, unto every one that will hear me, that before the cedars of our village shall have died down with age, and the maple trees of the valley shall have ceased to give us sugar, the race of the little corn sowers will have exterminated the race of the Flesh-Eaters, provided their huntsmen do not resolve to become sowers.

Revue Horticole, Paris, July, 1853. [Translated by H. Meigs.]

FLOWERING OF THE PAULOWNIA OR KI-KI.

Its flowering this spring is assuredly one of the most singular phenomenon of this completely irregular season; it had put all

calculation at defiance. According to its habits, the buds were formed last year in October, and, considering the vicissitudes of the winter and late spring frosts, they were supposed to be destroyed—that was the opinion of most of our gardeners. But contrary to all expectations, about the last of May, a,portion of the buds began to develope (not according to its ordinary habit, on limbs naked of leaves,) on branches already clothed with growing leaves, whose fresh verdure was mixed with the amethyst blue of the flowers, resembling some of our most beautiful gloxineas. Our readers who possess paulownias, will be pleased to hear of those trees, produced from the first seed given by M. De Cussy to W. Neuman; M. De Cussy had imported it directly from Japan. That father of all the paulownias in Europe, is on this day, the seventh of June, covered at the same time with leaves and flowers, which have a peculiar odor, like a mixture of the violet and the sweet smelling flouve. From the seed we may obtain a paulownia, which will suit our climate better, and we may succeed in obtaining one that will give us bouquets of its flowers in September and October—the thing is worth trying by our able nurserymen—it would be a precious flowering at that season of the year. Let us remember, that south of the Loire and even in Paris, the paulownia can be cultivated not only for its ornamented character, but, as its wood is solid and light, it is precious for wheelwrights. All the ploughs in Japan are made of this ki-ki. On account of its great value for such purposes, it is grown in preference to any other tree, and is planted along the sides of all the great roads of Japan.

Annales de la Societe Imperiale d'Horticulture, June, 1853:

M. Payen, *on the disease of the potato, the beet, the grain and the grape vine.*

This is a subject of palpitating interest, and I leave all abstract notions—I obey nothing but the truth as to the origin and the causes of the evil, the circumstances favorable to it—the efforts of men of science and of practical men to combat it. Our epoch presents a melancholy spectale unforeseen, suddenly born para-

sites, the cryptogamic species attacking all those articles of food, so indispensable. Will it come, that our globe shall end by being buried under accumulated beds of the myceliums and fungi, which, by their extreme smallness, elude our studies, and are only revealed by their ravages, which we behold, powerless to avoid or to remedy? No, God has not willed that this admirable work of his creation should be extinguished by mould! A spark of that genius with which he has endowed man, will reveal the means of safety. Help yourself and God will help you.

We must not forget that about the year 1760, grain was attacked by a disease, before that time never known, and the dearness of bread led to a series of horrid privations, sufferings and death! The learned men and the economists of that day aroused by the spectacle, united in search of a remedy, and they soon discovered, that, by the use of lime, health was restored to grain.

AGRICULTURE AND HORTICULTURE OF JAPAN.

Firs and cypress are the most common trees of the forest. They grow in barren sandy plains, fit for nothing else; they are so placed by the people.

For shade or ornament, some are planted in rows along the roads and over ridges of hills, and they give great beauty to the country, and make travelling in warm weather pleasant. For every tree cut down, a new one must be planted. Some of their cedar trees measure eighteen feet in circumference. A camphor tree of fifty feet round. Cedar nearly one hundred long. Two varieties of oak; very different from those of Europe. Their acorns are boiled for food. Mulberry trees abundant—the silk is coarse. For fine silk they use leaves of young saplings. The varnish tree yields the peculiar Japan varnish, it is called *urusi*, (Lindley calls it the *rhus vernix*, of the order of anacards or terebinths) which yields a rich, milky, white glutinous juice. This forms the celebrated Japan varnish used on wood, all furniture, dishes, and plates, pitchers and tumblers, of wood or paper—the use of plate, porcelain or glass being prohibited to the common people.

The camphor tree bears black and purple berries agreeable to look at. The country people make camphor by cutting the roots and stem into small pieces and making a decoction from them. The pepper tree is common. They have three sorts of figs, larger and better flavored than the European figs. Chesnuts plenty and excellent. The Kaja tree, whose nut gives a sweet oil like that of sweet almonds. It is used in medicine and cookery. The soot of these nut shells makes the best Indian or Japan ink. Another oil nut tree valuable. Oranges and Lemons of several kinds. A small, delicious lemon is much used in cooking. Plums, cherries, apricots. The cherry and plum are chiefly valued for their flowers. The flowers are so improved by cultivation that they grow as large as roses. They lead branches from the trunk of a tree seven or eight feet high, three hundred feet for shade, &c. They have many other peculiar trees. The jusnoki, an iron wood, very much employed in building. The country abounds in flowers. The satsuki, a large shrub, grows in woods and hedges, bears flowers resembling roses. The Japanese say they have nine hundred names for different sorts of the satsuki. The satsuki resembles the lily—has many varieties. The purple and the scarlet are great ornaments to the hills and fields. The monidsi, a kind of maple, with leaves of a beautiful color. Our common lily, narcissus, gilliflower, grow wild as well as in cultivation. Their flowers are superior to ours in colors, but inferior in odors. They have mushrooms in abundance. They grow vast quantities of tobacco, and smoke it too. Christian Missionaries introduced it, and the Japanese call it nearly by our name of it—tobago. They smoke opium too. Out of rice they make their sackee, their common drink—it is like thick strong beer.

They have Indian corn, turnips, large pears, carrots, fennel, horseradish, lettuce, cucumbers, gourds and good melons, hemp and flax. They grow rice on upper land—but it is inferior to that grown in the usual way, watered. They dwarf plants wonderfully. A box was offered for sale to the Dutch Governor of Nangasaki, three inches long and one inch wide—in which were flourishing a fig tree, a bamboo and a plum tree, the latter in blossom, price 1,200 florins.

The Chairman then called up the regular question of the day, viz., Top-dressing of Land. Judge Van Wyck opened with the following:

Judge Van Wyck—This question of top-dressing is an important one in farming. As no one offers, after its announcement from the chair, I will make a few observations, by way of opening the conversation on it. It means, I believe, the spreading of manures, of any kind, broad-cast on the surface of land, and letting it lay there for its effects on plants; that is, not plowing it in, or covering it. The manures so used are generally of the light kind; that is, of the mineral class, and almost always pulverized or broken into minute parts: In this shape it takes hold of the plants more effectually, is easier of solution, and covers a greater surface. The kinds most used in our country are gypsum, lime in a hot or slacked state, ashes, charcoal, salt, rich moulds collected from various places about the buildings and farm. The scrapings and dust of roads are good. These are combined often and mixed together. The phosphates, or bone earth and guano, are beginning to be considerably used in our country. In Europe of late, and especially Great Britain, great importance is given to the nitrogenous class of light manures, formed from the nitrogen, or azote of the atmosphere, ammonia and animal matter. Such eminent practical farmers as A. H. Main of Scotland, Mr. Pusey of England, and several others of both countries, who stand, perhaps, equally high, join in recommending it. Mr. Main, of Mid Lothian, Scotland, has made numerous experiments within the last six or eight years with various light manures as top-dressings, and reported his results to the Scotch Agricultural Society, which published them in its transactions, and were highly approved and commended by the public. He gives the preference decidedly to the nitrogenous kind as yielding the most abundant and profitable products—such as nitrate of soda, nitrate of potash, (saltpetre) nitrate of lime, &c. The best nitrates come from the east and the interior of South America. They are as cheap, and probably a little cheaper than guano. Mr. Main says decidedly they are the best for all the grains and grasses. Barnyard manure, if properly preserved and applied, makes a good top dressing for the grasses. I have often witnessed the good effects of this upon

good land, applied the latter part of May, or first of June. When the young grasses just spring up and get a fine start the manure is washed down about the roots by the rains, soon dissolves, lays there, and forms a rich food; and the grass plants feel and show it the season through. The heighth of the grass protects the manure from the sun, and very little, or none of it, is exhaled in the shape of vapor. I have seen lots of fifteen or twenty acres dressed in this way keep twenty or thirty head of cattle the most of the season, and make them good beef. Prof. Mapes has spoken of the nitrogenous manures as a top-dressing for land, and approves of them highly, as a chemist. He knows their ingredients, and can tell whether, as a stimulant or food, they will best develope and support the progress of the cereals and grasses from germination to maturity. It has been said by a speaker that our eastern farmers generally are in the habit of stacking their hay on different fields and foddering it out to their shivering cattle in winter, by which much hay was wasted, and manure damaged and lost. This was the practice considerably some forty years ago, but now our best farmers, or those I know much about, cart their hay home and house it, and fodder it to their cattle under sheds, in their barn-yards, during winter, where they have conveniences for keeping it dry and not being trampled on, and also preserving all their manure by piling it in snug compost heaps, and sheltering these from the weather; and taking care, also, of their liquid manures, and occasionally watering the solid with them, and thereby greatly increasing the value of both, as fertilizers; besides keeping the yard clean, and making it more healthy for stock; and the manure kept and preserved as last described, would make it one of the best top-dressings for land.

Prof. Mapes was requested to speak, and he replied that it was a very important question and embracing so many things that he hardly knew how to classify them. We used to call top-dressing anything thrown upon the surface of the land, when barn-yard manure was so applied. We now know it was misapplied, for nine-tenths of its useful properties were evaporated and carried off by the wind. So far as that barn-yard manure consisted of hay, straw, &c., it did some good as a mulch, merely.

Salt hay, refuse hay, straw, &c., are good for that purpose, when afterwards ploughed in. But we have all noticed the peculiar rich growth on a spot where a board, or even a rail, has lain on the ground for some time—that is mulching. A mulch of hay, straw, &c., lets in and retains dew, &c., and enriches the land. We now adapt our manures to our soils—a great improvement, evidently—as some manures, added to certain soils, do no good at all; and even, in some cases, are hurtful. Among others, we employ nitrical soda; it is found in great abundance in Peru; costs only $2\frac{3}{4}$ cents or 3 cents a pound. It produces excellent effects, when judiciously applied, on grass lands especially. In some cases we use sulphate of lime, (plaster of paris.) In manuring there are chemical changes, sometimes guessed at, but indistinctly understood. We find charcoal dust an admirable top-dressing. It is not a manure in itself, but it possesses the most valuable property of arresting the volatile fertilizers, detaining them until some plant wants it, and by its powers takes out the fertilizer as it requires. The roots of plants, near the surface, take up the volatile manures used as top-dressings, and gather vigor from them. We use five or six bushels of common salt, as a top-dressing, per acre, with the following great advantages: It destroys grubs and bugs, while it is at the same time good for many of our useful and valuable vegetables.

Bones, so prepared that they can enter the soil and be used by plants freely and easily, form a very useful top-dressing. The spent ley of soap boilers is good, also. Wet piles of the soil with it, and when dry top-dress with it. Top-dressing shows its value on pastures that have been much abraded by the cattle. Slight harrowing is good for that pasture. But I have lately contrived an implement which acts much like a mole; it can be drawn at eighteen inches deep in lines four feet apart, and moves, in some measure, all the soil—lifting it up; letting in air; forming, also, a tolerable underdrainage; and not hardening the subsoil like the sole of the plough, for this has no sole. It is very readily sharpened, and ought always to be sharp in order to do its duty faithfully. It costs but little to make it, and it can do a great deal of work in a day. The pasture so treated is greatly benefited

by it. I have found greater effects from some top-dressings than science accounts for; perhaps they are due to the greater division in the fertilizers applied. Some soils that are almost barren are found upon examination to have the constituents of fertility, so that by a greater division of these particles, by grinding them finer, they would become fertile. The particles of soil are hard to mix. Try to mix white and black sand, and you will be surprised to find how difficult it is to mix the two intimately, so that the particles will each be in connection with the other, and convenient for the delicate spongioles of plants to use. It is proper to say that the volatile manures require judgment in their application.

I have found that by sprinkling a solution of guano upon my grape-vines, at the period of their summer rest, I gained much by their better growth. This subject is not easily exhausted; but for this time I have done.

Solon Robinson said that the only object of our discussion here was to elicit the truth, let it come from whence it may. When I was a boy, what a very limited amount of manure was to be seen on farms in general. What foolish top-dressing had we then. The dung dropped by the cattle here and there, frozen hard as stones, and boys set to work in the spring with wooden mauls to break them in pieces; the poor hay stack out in all weathers; the hay scattered from it in a circle; never hauled to the barn. What signifies hauling it to the barn? You will have to haul what is left out again on the land in the spring. We have no time for such nonsense as that. I used to be sent to the stack to dig out some hay from under the snow and ice; it used to be *darned* cold, so I did not dig too much. What I carried home was not enough to hurt the poor creatures; they could have eat more if I had dug it out for them. Our Judge Meigs, the secretary, laughs; he well knows how true this old story is. But when the weather would allow me, I used to take advantage of it and throw down from the old stack hay enough to last awhile; so it lay still more exposed to the weather, losing half its nutritious properties. The circle made by the hay stack, and the circle of hay around it, when ploughed up the next spring, showed

by its powerful growth what a fine mulch it had received—a most striking contrast to the poverty of the rest of the field. The masses of vegetable wealth in the ponds and low places were not noticed, if known; these will one day be seized by the Yankee, and he will hold them fast by the ears. Then the boy that mauled the manure in the field was wasted, so was the ill-used hay, and so were the mis-used cattle. All, all, wasted. Suppose that we had known how to spread the old hay on some of our barren knolls? they would for the first time astonish the farmer with a good crop. Our old notion was to pile all up to rot for next year's manure. We say these things for the benefit of some among us whose crowns are covered with hair as white as snow—like mine! We are not too old to learn. Sir, we are growing wise; we shall know how to make and use manure by-and-by. Mix it thoroughly with your soil; knead it in as you do your flour, and leaven and salt to make good bread. Knead it, and knead it, and knead it, and then it will do! If you should knead the manure in two feet deep, never regret it, for the roots of your crops will be sure to go down for it. If you don't knead your bread it will not be fit for the pigs. Just so with the soil, for it will not feed your pigs without kneading.

Mr. Lawton laid upon the table some of his large blackberries, still going on, in abundance, to ripen. Also some beautiful cauli, rapas (cabbage turnips), from seed given by Professor Mapes. Also some dark colored potatoes, from those presented by the secretary of the Farmers' Club, of Newport, Rhode Island. They are not attacked by disease. Also some potatoes of a light color, all free from disease, while Mercer and other potatoes on his farm are ruined. The cauli-rapas are precisely like those exhibited in the beautiful drawings of vegetables, presented to the Institute by M. Vilmorin, of Paris. The club proposes to have some of these cooked, that the members may learn their taste and quality at the next meeting, on the 20th. Mr. Lawton also presented some pears he supposes to have probably been introduced originally into New Rochelle, by the Huguenots—the pears are from trees, growing in the glebe land, and are old, possibly, from seventy to one hundred years. One of them is called the church

pear, and the other parsonage pear. The club pronounced them delicious. Mr. Lawton says, that at the proper time, those who wish it, will be supplied with grafts. Also a pear, which he believes to be a Bartlett; a very fine one, whatever it be.

Dr. Bartlett, formerly of *The Albion*, has two sons who are actively employed in farming, in New Jersey. One of them is nineteen years old, the other twenty-one—they love their farm. They present a cabbage turnip, weighing about seven pounds, from their farm—good for cattle.

Henry W. Bertholf, of the town of Sugar Loaf, in Orange county, presented grapes of a large size, from a vine growing there, of a great size, measuring at the base, three stems close together, fifty-two inches in circumference. The vine is believed to be forty-seven years of age. It is a large round purple berry—high murk and good taste for a wild one.

Prof. Mapes moved, that, as fall is approaching, and fruits are to be taken care of, the next subject shall be their keeping and preservation. Adopted.

H. MEIGS, *Secretary*.

September 20, 1853.

Present—Messrs. Lawton, Dickey, Dr. Church, Chandler, Chambers, Col. Lewis, Morris, Veeder, &c.

Dr. Austin Church in the chair. Henry Meigs, Secretary.

The Secretary read the following papers, prepared by him:

TO RAISE NEW VARIETIES OF FRUIT.

Mr. Downing has considered this interesting question fully, and we take great pleasure in giving more publicity to his remarks, and recommend his works to all who love such subjects, or who would profit by raising new sorts.

"When we desire to raise new varieties of fruits, the common practice is to collect the seeds of the finest table fruits, those sorts whose merits are everywhere acknowledged to be the highest. In

proceeding thus, we are all pretty well aware that the chances are generally a hundred to one against our obtaining any new variety of great excellence. Before we offer any advice on rearing seedlings, let us examine briefly the practice and views of two distinguished horticulturists abroad, who have paid more attention to this subject than any other persons whatever, Dr. Van Mons and Thomas Andrew Knight, late President of the Horticultural Society of London.

The Van Mons Theory.

Dr. Van Mons, Professor at Louvain, (of Belgium,) devoted the greater part of his life to the amelioration of fruits. His nurseries contained, in 1823, no less than two thousand seedlings of merit. His perseverance was indefatigable, and experimenting mainly on pears, he succeeded in raising an immense number of new varieties of high excellence, such as the Beurre Diel, De Louvain, and Frederick of Wurtemberg.

The Van Mons theory may be briefly stated as follows: *All fine fruits are artificial*: the aim of nature, in a wild state, being only a healthy, vigorous state of the tree, and perfect seeds for continuing the species. It is the object of culture to subdue or enfeeble this excess of vegetation, to lessen the coarseness of the tree, to diminish the size of the seeds, and to refine the quality and increase the size of the flesh or pulp.

There is always a tendency in our varieties of fruit trees to return by their seeds towards a wild state. This tendency is most strongly shown in the seeds borne by old fruit trees, and the "older the tree is of any cultivated variety of pear," says Van Mons, "the nearer will the seedlings raised from it approach a wild state, without, however, ever being able to return to that state. On the other hand, the seeds of the young fruit tree, of a good sort, being itself in a state of amelioration, have the least tendency to retrograde, and are the most likely to produce improved sorts. Again, there is a certain limit to perfection in fruits. When this point is gained, as in the finest varieties, the next gene ration will more probably produce bad fruit than if reared from seeds of an indifferent sort in the course of amelioration; while, in

other words, the seeds of the oldest varieties of good fruit mostly yield inferior sorts; seeds taken from recent varieties of bad fruit, and reproduced, uninterruptedly, for several generations, will certainly produce good fruit."

He begins by taking young seedling trees in a state of variation, (that is, cultivated in a garden,) he plants the seeds of such variation trees in his nursery. When the seedlings are large enough to enable him to judge of their character, he selects the most promising, plants them a few feet apart in the nursery, and awaits their fruit. He is not discouraged, though most of them be of mediocre (middling) quality, differing from the parent. He gathers the first seeds of the most promising, and sows them again. The next generation comes more rapidly into bearing than the first, and shows a greater variety of promising traits. Gathering immediately and sowing again, he produces a third generation, then a fourth and even a fifth generation, uninterruptedly, from the original sort. Each generation he finds to come more quickly into bearing than the previous one, (the fifth sowing of pears fruiting at three years,) and to produce a greater number of valuable varieties, until in the fifth generation the fruits are nearly all of great excellence. Dr. Van Mons found the pear to require the longest time to attain perfection, and he varied it through five generations. His apples needed but four generations, and peaches, plums, cherries, and other stone fruits, were brought to perfection in three generations from the seed. He always gathered the fruit before it was ripe, then let them rot, then gathered the seeds and planted them, for this rendered the next generation less wild and harsh. In transplanting the seedlings, he cuts off the tap root and shortens annually the leading and side branches. He plants them near together.

It is not a little remarkable, that the constant springing up of new sorts of fruit in the United States, which is every day growing more frequent, is giving much apparent force to the accuracy of the Van Mons theory. The first colonists here, who brought with them many seeds gathered from the best old varieties of fruits, were surprised to find the seedlings producing only very inferior fruits. These seedlings had returned by their inherent

tendency almost to a wild state. By rearing from them, however, seedlings of many repeated generations, we have arrived at a great number of the finest apples, pears, peaches and plums. Duhamel, of France, said that he had planted seeds of the finest table pears for fifty years, without ever having produced a good variety. He planted the seeds of old varieties of fruit. Yet, in the face of the Van Mons theory, new varieties of rare excellence are sometimes obtained by planting the seeds of old grafted varieties; thus, the Lawrence's favorite and the Columbia plums were raised from the seed of the Green Gage, one of the oldest European varieties.

Now let us examine another and more direct method, more interesting and more scientific, almost universally pursued by skillful cultivators, which Mr. Knight, the most distinguished horticulturist of the age, so successfully practiced on fruit trees.

Cross breeding.

In the blossom of fruit trees, and of most other plants, the seed is the offspring of the *stamens* and *pistils*, which may be considered the male and female parents, growing in the same flower. Cross breeding is then nothing more than removing out of the blossom of a fruit tree the stamens or male parents, and bringing those of another and different variety of fruit and dusting, the pistil or female parent with them—a process, sufficiently simple, but which has the most marked effect on the seeds produced. It is only about fifty years since this method has been practiced. But Lord Bacon, whose great mind seems to have had glimpses into every dark corner of human knowledge, finely foreshadowed it. He said, "The compounding or mixture of plants is not found out, which, if it was, is more at command than that of living creatures; wherefore it would be one of the most notable discoveries touching plants, to find it out, for so you may have great varieties of fruits and flowers, yet unknown." The pistil stands in the middle on the infant fruit; its top part is the stigma, the stamens stand around it, each having an anther poised on top, full of pollen. The stigma is like a dog's nose, always wet, so that the pollen or dust is always held by it. By cross breeding we have Coe's golden drop, raised from the Green gage, impregnated by the Magnum

bonum or egg plum, the Elton cherry, from the Bigarreau, impregnated by the White heart. Seedlings sometimes resemble one parent, sometimes the other. Cox says, that a pippin apple, crossed by a russet, had one end pippin, both in form and taste, while the other end was true russet.

The process is easy enough. When the blossom is not fully expanded, cut off with delicate scissors the anthers, when the blossom is fully expanded, collect the pollen from a full blown flower of the sort you wish to cross with ; you do this with a clean camel's hair brush, and apply it to the stigma or point of the pistil. If bees are much about the flowers, you should throw fine gauze over them. None but allied plants can be hybridized—pear pollen will not fertilize the apple, nor gooseberry the currant, but the strawberries do readily, and so all the gourd and melon family.

Florists are making great use of this cross breeding in their flowers.

It is not always by the first fruits of seedlings that we can judge. The first fruit of Knight's cross bred eagle cherry, was pronounced worthless, when first exhibited at the London Horticultural Society, but after some years it had become very fine fruit.

Peach.

It is pleasant to know the history of those delicious peaches, which now abound in our city. That large, deep yellow, red peach is the Melocoton, sometimes weighing nearly half a pound. There are several varieties of it, but the largest and finest we have seen, have been from New Jersey. We have given a shilling for a single one of the largest and best of the Jersey Melocotons. This name comes by way of Spain, Melocoton, a peach grafted on a quince tree, the original term being from the Latin *Malumcotoneum or Malum Lanatum*, that is, the apple covered with cotton, or *Lanatum*, covered with wool. The Latins called the quince also *Cydoneum*, and from its color they called it *Chrysomelum*, or gold apple.

The Early Newington.—A clingstone, medium size, fine red cheek next to the sun, white on the other side, flesh white, some red next to the stone.

The old Newington Cling.—Round, large, red on one side and white on the other; at the stone of a deep red; melting, juicy; wine flavored; ripe towards the middle of September.

The flowering peach.—Large flowers of from fifteen to thirty petals, abundant flowers; little fawn colored peaches; with a velvety skin; flesh white; pleasant taste, but very few of them.

The Rapelye Peach.—A seedling from the old Newington; extensively cultivated (twenty years ago) by Mr. Rapelye, of Long Island. It has been called Vanderveer's Optimum. One cheek is usually larger than the other.

Red Rareripe.—Morris's red rareripe, or Monsieur Jean, or old John. Supposed to have been introduced by the French at an early period; ripens towards the middle of August; large, round, bright red next to the sun; flesh very delicious; separates readily from the stone.

Yellow Rareripe.—Yellow with a red cheek; flesh yellow; free-stone; luscious taste; has an affinity to the yellow melocoton.

White Rareripe.—Morris's White. Morris's White Rareripe; a well known, delicious peach.

Monstrous Lemon Peach.—From its resemblance to a lemon; has grown in New-York to the weight of seventeen ounces, in sheltered locations; first discovered in the garden of Mr. Tiebout, in the city of New-York, nearly forty years ago.

The Heath Cling.—Free, hardy, and of vigorous growth; ground must be kept mellow about it, and it bears so abundantly that you must thin out the fruit. This peach may be kept until November, and after it has been picked, if kept for some days, it becomes richer in taste; after some time it loses.

It is said to have been discovered growing wild on the farm of Judge Willet, of Flushing, Long Island, in a barren heath, as the

old English settlers called some of their uncultivated land. It was cultivated on Long Island before our revolutionary war. It is peculiar for its property of producing the same fruit from its pits.

Blood Peach.—A rare kind in the New-York market nowadays. The flower is quite small; the peach is egg-shaped, dark purple color, very cottony, not very good taste, but is valued for preserves, and even for pickles.

The Indian Peach, or Georgia Peach, is a blood peach; ripens in September.

The Astor Peach, by Floy.—Originated here (New-York) about thirty-two years ago. Pale yellowish white; a deep red cheek, flesh melting, very juicy, sweet, of an excellent flavor, ripens last week in August. The flowers are large.

The Druid Hill Peach.—A new free stone, of splendid size, high flavor, very late in ripening. Originated about twelve years ago by Lloyd N. Rogers, of Druid Hill, near Baltimore. The peach is very large; roundish; cavity at the stalk rather narrow; skin pale greenish white, clouded with red on the sunny side; flesh greenish white, purple color at the stone, very juicy; melting; an extremely rich wine flavor; stone long, deeply furrowed; compressed; ripe between the 20th of September and the 1st of October.

The Flat China Peach, Java Peach, or Peen Fo, is a very singular variety. It is about two inches in diameter, and so much flattened at the ends that only the skin is on the flat stone, the flesh being all crowded on both sides. Skin pale yellowish green, mottled red on one side; flesh pale yellow, a circle of red round the stone; free; sweet, juicy, with a slight noyeau flavor; ripe in beginning of September. Flowers large.

Free stones.

Early York, White Imperial, Early Newington, Royal George, Grosse Mignonne, Crawford's Early, Bergen's Yellow, Noblesse, Brevoort, George Fourth, Malta, Late Red Rareripe, Druid Hill.

Cling stones.

Large White Cling, Oldmixon, Heath.

Hardy kinds for the Northern latitude.

George Fourth, Yellow Rareripe, Early York, Morris Red Rareripe, Grosse Mignonne, Noblesse, White Imperial, Crawford's Early, Favorite, Bellegarde, Breevort, Coledge's Favorite, Morris's White Rareripe, Large White Cling.

We have said thus much as to the peach, one of our most delicious things, in order to call attention to the best book ever published on this very important subject for America, and that is our lamented Downing's "Fruits and Fruit Trees of America," an octavo of 594 pages; of which he has devoted 49 pages to peaches—especially valuable, because he was practically intimate with the things he describes. Many authors are known to compile books relative to things they scarcely know by sight.

The selection of successive ripeners by Mr. Downing is of great importance, as it keeps this luxury on the table for many weeks.

The time of ripening in the list we have given, is as follows:

Grosse Mignon	August 15.
Early York	do 18.
Royal George	from 20th to 31st August.
Early Newington	August 24.
White Imperial	do 25.
Yellow Rareripe	do 25 to 30.
Malta,	last of August.
Crawford's Early Melocoton,	do
George IV	do
Noblesse	do
Bergen's Yellow	1st of September.
Brevoort	do
Late Red Rareripe	from 1st to 10th September.
Large White Cling	from 1st to 15th do
Oldmixon Cling	1st September.
Morris's White Rareripe	15th do
The Favorite	do

Druid Hill ....from 20th Sept. to 1st October.
Heath ....in October, and good a month.

The keeping of fruit—Apples.

Downing says, as to apples, "it is indispensable that they should be gathered by hand; that for winter apples the gathering should be delayed as long as possible, avoiding severe frosts; place very carefully in new, tight flour barrels as soon as gathered from the tree. These barrels should be gently shaken while filling, and the head closely pressed in. They are then placed in a cool, shady exposure, under a shed open to the air, or on the north side of a building, and covered with boards. They remain there a fortnight, or until the cold becomes too severe, when they are carefully transferred to a cool, dry cellar, in which air can be admitted occasionally in brisk weather The cellar, if possible, should be dry, in dry, gravelly or sandy soil, with a slope to the north; or, at any rate, with openings on the north side, for the admission of air very rarely and not in excessive cold. Here the barrels should be placed on their sides, and the cellar should be kept as dark as possible. In such a cellar, one of the largest apple growers in Dutchess county is able to keep the Greening apple, which in the fruit room usually decays in January—until the first of April, in the freshest and finest condition. Some persons put a layer of straw between each layer of apples. Apples are frequently kept by farmers in pits or ridges in the ground, covered with straw, and a layer of straw over that, in the same manner as potatoes, but it is an inferior method, and the apples decay very speedily when opened to the air."

Thus far says Downing: For further information we refer to the methods pointed out by Robert L. Pell, of Pelham, contained in the Transactions of the American Institute for 1851.

PEARS.

Most varieties are much finer in flavor if picked from the tree and ripened in the house, than if allowed to become fully matured on the tree. There are a few exceptions to this rule, but they are very few. And, on the other hand, we know a great many varieties which are only second or third rate when ripened on the tree,

but possess the highest and richest flavor if gathered at the proper time and allowed to mature in the house. This proper season is easily known: First, by the ripening of a few full grown, but worm-eaten specimens which fall soonest from the tree; and, secondly, by the change of color, and by the readiness of the stalk to part from the branch on gently raising the fruit. The fruit should then be gathered, or so much of the crop as appears to be sufficiently matured, and spread out on shelves in the fruit room, or on the floor of the garret. Here it will assume gradually its full color, and become deliciously melting and juicy. They will also last for a considerably longer period, if ripened in this way—maturing gradually as wanted for use, and being thus beyond the risk of loss or injury by violent storms and high winds.

Winter dessert pears should be allowed to hang on the tree as long as possible, until the nights become frosty. They should then be wrapped separately in paper, packed in kegs, barrels or small boxes, and placed in a cool, dry room, free from frost. Most kinds of the finer winter dessert pears should be brought into a warm apartment for a couple of weeks before their season of maturity. They should be kept covered, to prevent shrivelling. Many sorts that are comparatively tough, if ripened in a cold apartment, become very melting, buttery and juicy, when allowed to mature in a room kept at the temperature of 60 to 70 degrees. So important is the ripening of pears in the house that most amateurs of this fruit find it to their advantage to have a small room set apart and fitted up with shelves in tiers, to be used only as a fruit room.

We have referred for the keeping of apples to Mr. Pell's method, as recorded in the Transactions of the American Institute for 1851, and other methods. We do it because no man (as far as we know or believe) now has, or ever had so large an orchard of apples to take care of as Mr. Pell. He has about twenty thousand apple trees well taken care of, the fruit of which goes to Europe largely.

We refer to a remark made by us, that fine fruits should be handled with as much caution, at least, as so many eggs, if we would have them keep the longest possible time.

It has been believed that fruit kept at a temperature just above freezing will be preserved any length of time. The fact of the flesh of the mammoth found in ice, being fresh and eatable, is the most memorable example known of the preservation of so perishable a thing as flesh. Some wines preserved in Herculaneum and Pompeii are worthy of consideration. We have much to learn as to the preservation of seeds. The preservation of human bodies in the grave for several hundred years, without embalming, led to further inquiry as to the causes and means. The prepared meats and fruits of modern times, are part of the system. In all probability, human ingenuity will discover some method vastly superior to all hitherto found out.

A CHEAP METHOD OF DISSOLVING BONES FOR MANURE.

It is stated by good authority, that by placing at the bottom of a vessel a layer of unleached wood ashes, four inches thick, then on that a layer of bones four inches thick, and so on until the vessel is filled, then wetting the mass moderately, the ashes will dissolve the bones in three or four weeks, so that with a spade one can chop up the bones, for they are almost a paste; then dry the mass (after well mixing bones and ashes,) pulverize and sow it.

If this be true, we are all provided with the cheapest way possible of making phosphate of lime for our plants.

The quantity of bone earth required is but small in most vegetables. Berzelius made careful analyses, and here are some of the results. For instance—

The Pear—Phosphate about	$14\frac{1}{2}$	per cent.
Spitzenburgh Apple,	18	do

William Lawton, of New Rochelle, was requested to say something as to the cheap graperies he had lately visited, and he re-

plied, when at Geneva, I visited two cold graperies, which, to me, were objects of special admiration. One was built by an elderly gentleman for his own amusement and recreation, against a high board fence, by raising the fence a little, and filling in with clay and materials, which I judge cost little more than the trouble of collecting them, the building might be twelve feet high in the rear, two and a half in front, ten feet wide and twenty-five long—about half the sides filled in the same as the rear, all the residue of glass in the usual way. I should think the whole building might cost $50 or $75, if all the materials were purchased.

In this humble establishment, coarse and rather unsightly in the exterior, I saw a display of fruit rapidly maturing, which the most scientific gardener might be proud of. Eight varieties of foreign grapes in all the luxuriance of healthy growth, trained upon wire in the most critically correct manner, reaching from the ground to the back wall, each lateral brought out at a proper distance, and sustaining its due burden of fruit, each leader stopped at the right time, to throw the sap into the fruit branches, they, in turn, checked by finger pruning so judiciously, as not to hazard the breaking of buds designed for another season, not a blemish appeared upon a single vine, the peculiarities of each was attended to in the cultivation and all their characteristics beautifully displayed by correct cultivation; here was the "Black Hamburg," with its broad shoulders and massive clusters, its cousin, the "Black Prince," of very similar qualities, the "Golden Chasselas," that delicious and beautiful grape that the late Mr. Parmentier so highly recommended for out-door cultivation. The "Black St. Peters," with its deep, black bunches, ripening here, while it sickens in the artificial heat of the costly conservatory, here, too, is the finely flavored purple grape, the "Black Frontinac," with its long branches: The grizzly Frontinac, with its brown jacket and round, musky berries, the "White Muscat, of Alexandria," with its firm and delicious fruit, and last on the list, and a very near relative, possessing its good qualities and something in addition, is the "Cannon Hall Muscat," with fine bunches, and each grape a good mouthful of substance and flavor, equal if not superior to any other. This little conservatory is managed and attended to entirely by the owner, to amuse his leisure hours,

and he has no other knowledge of the cultivation, than that so easily obtained from books.

The proprietor and cultivator of the other grapery, is a store keeper, who was kind enough to leave his place of business and accompany me to visit his establishment in the suburbs of the town. Only four years since he cleared his ground and began his improvements—a neat, two story house, and suitable out houses, and his grapery; he occupies less than an acre of ground, which is beautifully laid out, and filled with fine fruit trees and valuable plants. A number of his dwarf pear trees were laden with fine specimens of fruit, and I noticed against one of his buildings, the hardy Isabella, beautifully trained and full of fruit. After admiring these and some ornamental plants in his door yard, he took his key from his pocket and introduced us into his cold grapery, and treated us to some delicious ripe fruit. From the perfect management of his vines and exactly similar treatment, I should suppose the proprietors of these "model graperies," often compared notes, as I believe, they both commenced at the same time and pursued the same plan of doing all the work themselves, guided alone by the exercise of their own good sense and the directions in popular works on the subject. This building is larger than the first described, and is constructed against his carriage house at an expense of about $125. This gentleman has a greater number and variety of plants than his neighbors—among them, the Syrian, which sometimes grows to a prodigious size.

In a note in an old English work, I find, in the year 1781, a bunch was produced at Welbeck, weighing over nineteen pounds. It was presented to the Duke of Portland by the Marquis of Rockingham, to whom it was conveyed a distance of twenty miles, by four laborers, who carried it, suspended on a staff, in pairs by turns. Its diameter, when hanging in its natural position, was nineteen inches—its circumference four feet and a half, and its length, twenty-one inches and three quarters. I saw at the fair in Castle Garden, last year or the year before, a fine specimen of this fruit, and I trust in a few weeks a specimen of this and all the other choice varieties may again be seen here at the fair of the American Institute, where, if we cannot taste, we can see and admire.

Mr. Veeder.—I recently visited Mr. Chamberlain's place, and noticed the method adopted by him, to secure his peach trees from the worm. He plants the trees in his chicken yard, and has healthy trees on the same spot, where Judge Van Ness formerly had them ruined by the worm.

Mr. Lawton said, that the chickens destroyed the worms when they were endeavoring (as is their habit) to get to the roots of the trees.

Mr. Veeder had remarked a good effect as to the fruit of the peach tree, produced by *stinting* the tree after it has had a vigorous growth. It afterwards yields more and better fruit.

Mr. Lawton observed, that our trouble with our plums was the Curculio—that good had been done by a small block of wood and a mallet, used at the curculio season;—place the block against the body of the plum tree, and strike the block smartly with the mallet, first spreading a sheet on the ground to receive the falling curculios—that tree will pay in plums for that little trouble.

I was acquainted with the father of Mr. Pell, of Pelham, who told me one day, that he was setting out twenty thousand apple trees, which in a few years will gain, at the very least, a dollar a tree per annum each! What better can I do with my land? Nothing, said I.

Mr. Lawton presented a specimen of the Church pear, of New Rochelle. Very delicious.

Mr. Grenzebach, of Brooklyn, presented some of his superb Balsams, set in pots. They are for endless variety of tints—a flower kaleidoscope!

Mr. Lawton states, that he has on his place at New Rochelle twenty four kinds of the most approved cherries. The best of them are the Black Eagle, Mayduke, Black Tartarian, Elkhorn, Bloodgood's Honey, Oxheart, and the Morellos, the English, Plum Stem and Early Richmond. He presented specimens of a stout, hard pear, from trees originally from Ohio. They are hardly edible at this time; may be good bakers and long keepers. They are called Flatheads, from their figure.

The club then adjourned (on account of the October Fair) to the First Tuesday in November next, being the first day of the month. H. Meigs, *Secretary.*

November 1*st*, 1853.

Present—Fifteen members.

Samuel Allen, of New-Jersey, in the Chair. Henry Meigs, Secretary.

Samuel Fleet, on Agricultural statistics, said:

"In all ages of the world, statistical information has been sought and appreciated; but not until more modern days has it assumed the characteristics of a science, embracing all the varied interests of society. In early times, it was valuable more particularly in reference to the imposition of taxes, and to military and naval resources. Devotion to this study now leads its votaries into commerce, manufactures, the arts, agriculture, and to the enumeration and investigation of all the varied changes, phenomena and operations of the whole material world, and their connection with mind and the psychological condition of man. Deductions varied, curious, and of the utmost importance, are derivable in every department of this branch of study. The pursuit of statistical science greatly and wonderfully enlarges the sphere of human knowledge, and habituates the mind to close investigation and great accuracy. It enlists those of all capacities, and carries the individual from the confines into the very midst of the world of knowledge.

"Agricultural statistics have been more neglected than those of commerce, manufactures, and military and naval affairs. The censuses of the State and general government have created an increasing taste for agricultural statistical information. Much of its pleasure has been marred, and much of its usefulness destroyed, from real or supposed inaccuracy. This inaccuracy has arisen, in a very considerable measure, from the fact that the people have not been educated to collect, and consequently were unable to impart, the desired information. Publishers of newspapers have

done more than all others to collect and disseminate valuable statistics. They are constantly enlarging the statistical sphere: The numerous agricultural societies spread over the whole country have been, on this subject, thoughtless, negligent and culpable. They could perform an important service in educating the people to collect the most valuable statistical information. A few premiums, given by each county society, would secure the annual collection of the most complete returns from every town, embracing information not only valuable to the farmer, but to every member of the community, and educating the people to render to the State and general government the desired full and reliable information. A more correct view of the adaptation of these societies for progressive and enlarged usefulness, would point them out as most efficient agencies for the practical and scientific advancement of the rural population. Long ere this, the State Society should have had a statistical bureau, familiarly known to the whole agricultural population.

"These remarks will apply to the American Institute. Its objects embrace the whole industrial interest of the country, and its province and usefulness for the future are indicated by recalling its incipiency and growth. It must lead in the wants of the age, or other institutions will rise and occupy its prospective sphere and agency. The Farmers' Club is a popular branch of the Institute—occupies an important station, and has before it a field of action constantly enlarging. Under this impression, I have long been of the opinion that an additional variety might be engrafted into its proceedings, not only without injury to its agricultural character, but in harmony with its objects, and greatly promotive of its usefulness.

"I would, therefore, propose that the last meeting of the Club in the months of March, June, September and December, be devoted to the reception and discussion of Agricultural statistics. Let this arrangement be widely known; let requests be sent to the numerous friends and correspondents of the club; let the industry and devotion of our intelligent Secretary be called into requisition; let thought be given to the subject, and ways and means devised to stimulate inquiries, and the club will soon be

in the receipt of statistical facts, forming the basis of important quarterly and yearly reports, that will be published throughout the country, and largely add to its usefulness and weight of character.

"In March it is very desirable to know, for instance, the quantity of winter grain sown in the fall; how it has been affected by the winter; what are its prospects; what surplus remains of the previous year's crop, both in this and other countries; also, what new plants have been found worthy of cultivation. In June, the relative quantity and prospects of the hay crop, in order to regulate the sowing of turnips, and other summer crops. In September, all those particulars that would govern the quantity of winter grain to be sown. In December, the total of products and consumption in locations, throughout the country and the world. The adoption of this simple plan would soon set hundreds and thousands of minds to work, and doubtless result in great benefit to the country, and credit to the club and Institute.

Respectfully, S. FLEET.

New-York, September 8, 1853.

The Secretary read the following translations, &c., made by him from works recently received from Europe. He observed that he believed it to be acceptable to read from the great and intelligent collections of Paris from all the world. The following may be pleasing to floriculturists, especially to the ladies:

Revue Horticole. Paris: July, 1853. [Translated by H. Meigs.]

CALCEOLARIA.

We are glad to have met with this article—enabling us to attain greater perfection, in these variable, beautiful slippers, which ought to have been named *reticules*—so like are they to many of those convenient little detached pockets, which no lady can be without, for her *mouchoir*, &c., &c.

We should begin our preparations for sowing the seeds of calceolaria about the middle of July. Make a box enclosure as large as you desire. It should be some eight or ten inches deep; exposed, as exactly as possible, to the north-east. It must be made capable of being very easily aired and shaded. To be certain that

the earth worms cannot get into this enclosure, fix the bottom of it with tiles or brick; on that bottom put soil, formed of what is called heath-soil. Bruyere, mixed with sand and earth sifted. The soil must be carefully composed, so that the water and the dews may penetrate it equally throughout.

When these preparations are finished, sow the seeds somewhat free of each other; then take a sieve, and sift over them a small quantity of the soil in the box—and it should be a little moistened before sifting it over the seeds. Then sprinkle the bed with a small sprinkler—lightly—often repeating it—but so as never to make a spot with so much water as to swim the seeds. Cover the box with glass frames—be careful to give air enough—and when the rays of the sun pour down strong, shade the seeds with a cloth; keep up the moderate sprinklings. When the plants come up, air them during the day by lifting the frames opposite to the sun. Continue the sprinklings frequently, but little at one time. Thus accustom the young plants, little by little, to the air, until they have put out four leaves, comprising the cotyledons. Now, proceed to taking the plants up to put them into pots. This must be very cautiously done, taking up with the roots as much soil as possible. Put them into suitable sized pots, having the same soil as that in which they were planted; only it is not necessary to have it so finely sifted. Put the pots into a box deep enough to admit their being covered by glass frames—let the bottom of it be pure sand—tiles and bricks are not now necessary. Water the plants copiously, in order to force the soil to penetrate all the roots thoroughly. The box must be always suitably shaded from the hot rays of the sun. Leave the plants two or three days close under the frames, and they will the better strike their roots.

Then take off the frames to habituate the plants to the air. When you find them hardy enough, then give them the open air, always exposed to the north-east. The bed on which the pots rest must be kept clean with new sand, in order that the calceolaria may be healthy. When the season becomes cooler, the plants must be re-potted. If (as it very often happens) the roots have reached the bottoms of their pots, we use larger pots to put them in, say near a foot deep. The plants must be re-potted,

without in the least disturbing the lump of soil about the roots; of course, more soil must be added to the larger pots. After standing some days, expose the plants to a warmer position; keep them there until they go into the frames, that is, on the first sign of white frost. During the time they are in the frames they must be re-potted twice, into pots still larger, as the plants may require. When the weather will admit, they should be well aired. They must be carefully kept from much wet; still they must not be too dry. They will not stand a temperature below 32° Fahrenheit, i. e. the freezing point.

In spite of all care, plant lice are apt to attack them. When you see some of the leaves curling, you may be sure the lice are there. The remedy, however, is very easy. At night close up the frames tight, and fill them with tobacco smoke; repeat it daily, and you may be sure of the destruction of all the lice. Other insect enemies, also, must be watched and exterminated.

The water with which you sprinkle the plants ought to stand twenty-four hours before you use it. In spring, you should sprinkle once or twice with water having a solution of pigeon dung or of poudrette. River water is always best. In the last half of March we find the flower stalks beginning to develope, and they soon after show their flowers. These must be sheltered from the fierce rays of the sun. The plants continue, then, to want repeated waterings until their flowering is over.

BREGALS,

Horticulturist at Maziers, (*Farn.*)

[Revue Horticole. Paris: 1853.]

THE CEDAR OF HIMALAYA.

The Deodar (Cedrum Deodara) is greatly multiplied in the parks and gardens of Western Europe, within the last twenty years. Hitherto only remarked for its graceful form, it now attracts great attention for its more solid value, the excellence of its incorruptible timber and the gigantic size to which it grows. The first idea of making forests of it in England belongs to Lord Auckland, former Governor of India. The East India Company sent a ton of the seeds (enough to produce fifteen or sixteen millions of

trees) to England. Messrs. Glendenning, of the garden at Chiswick, Lawson, of the Edinburgh, Skirving, of the Liverpool, and Waterer, of Knap Hill, took charge of the seeds. Should this experiment succeed, England will have, in another century, an immensely valuable forest of these Deodars. India considers it a sacred tree. The wood lasts an indefinite length of time. The resin from it is used in medicine. The ancient Arabians knew it. Avicenna called it the Dindar, and its rosin the same. It is used in India under the name *Kelon-ke-tel.* The wood has a fine grain, and is almost exclusively used for houses, bridges, temples, &c. Some of the trees measure 36 feet circumference at the base, and grow to nearly 200 feet high; they will grow almost anywhere, except in stagnant water. The wood is proof against worms and insects; it does not split well; requires the saw to make boards, &c. It has one fault: it is excessively inflammable, in consequence of the great amount of resin in it. Some of the temples—that of Kanaor—have its timber, which has been exposed to the weather for six or eight hundred years, and is sound, being darkened and fretted a little outside. The bridge of Zein-ul-Kadul has stood 400 years, and the Deodar timber in the water, as well as in the air, is, to-day, as solid as when it was built. So is the Grand Mosque of Jumma-Musjid, built by order of Aureng-Zeb, as solid as on the day it was built. Boards sawed out of it, thin, are not apt to twist, even when exposed to all weathers.

PRUNING FRUIT TREES THE FIRST YEAR.

Some years ago, quite a large number of our amateurs and professional gardeners, fond of raising fruit trees, did not prune them the first year, but let the branches grow, and then prune-saving the best limbs. This plan has friends and enemies. However, the process itself is but little known, and the public is ignorant, generally, as to the results of the experiments made. We will now give some details of those experiments.

Young pip fruit trees, especially pears, when they come out of the nursery, are frequently bare of branches below, or if they have any, they are poor little boughs, weak and badly constituted, having no harmony with the vigorous upper branches. By proper attention in pruning, by allowing proper buds to grow while

others are pinched off, we succeed in giving fine forms to the trees, and what is more important, limbs which bear better fruit.

STRAWBERRIES.

About a dozen years ago, there was a great rivalry among our horticulturists in raising strawberries from the seed. They obtained varieties which, for flavor, form and size, left nothing to be desired, even when compared with English strawberries. Among all these varieties, the one obtained by M. Pele, gardener of Mr. A. Passy, at Bezons, is very remarkable for its form, and, above all, for its earliness. Although it was exhibited in 1849 at the exhibition of the Seine Horticultural Society, yet it is still hardly known. Notwithstanding, it ripens in the open air at least fifteen days before others do. It is named after Mr. Passy's daughter, Marie Adelaide.

[Revue Horticole: July, 1853.]

GARDEN NOVELTIES OF FRENCH ORIGIN, OBTAINED FROM SEEDS.

We shall not contest the advantages which we derive from the multiplication of plants, by grafting, budding, or any other method, because they give into our possession vegetable riches and beauties without seeds. But seeds are the only true origin, and are now, after thirty years of grafting, budding, &c., becoming more important, especially with a view to obtaining new and valuable varieties. For several years we have taken pains to sow the seeds of shrubs and trees, and we have never passed one season without obtaining some plant more or less advantageous, and which paid us well for our pains. We believe that, under God, the gardener can give being to a multitude of new creations.

OKRA.

We translate from the Annales de la Societe Imperiale d'Horticulture de Paris: July, 1853.

[Communicated by M. Praxedes P. Pacheco, of Rio Janeiro.]

The Ketmie, a good culinary vegetable, is a species of the Hibiscus Esculentus, eatable Hibiscus; the Okra, (as we call it;) the Quiabo of Brazil; the Ethiopian name is Quingombo; in the Northern United States it is called Okra; in France, Gombo, Gom-

bau or Gombaud. In the garden, its stalk is made to support beans as they grow. Like the people of Rome, who attribute to the fountain Trevi the virtue of fixing at Rome all who drink its waters, so do the Brazilians suppose that all who drink the water of the river, become attached to the country, because the Ketmie abounds on its banks and gives the virtue to the water.

The seeds of Okra are roasted and made into a sauce, giving it a mucilaginous character, and is said to have an exquisite taste, (un gout exquis.) The Okra is used instead of flax seed, and for the same purposes in medicine, and it possesses all the virtues of flax seed and none of its evils, for one may take strong doses of it without any injury—it never does harm. The Okra is very suitable to the stomach, very easy of digestion, and the plant will grow in all kinds of soils, and even in quite poor soil.

The chairman called up the regular subject, viz:

THE KEEPING OF FRUITS AND VEGETABLES.

Mr. Fleet said, the subject is an important one, in reference to health—for poor sorts or injured sorts are unfavorable to it, while the pure and perfect are most salutary to our constitution. We should all be better in health by using fine fruits and vegetables more than we do, in place of meats—especially during the hot season of the year. It is important, therefore, that we should have it universally, and for the longest portion of the year (if we cannot have it the whole year). I eat less baker's bread, when I can get the delicious sweet corn, well kept. Simply boiled, it is an excellent wholesome and relishing dish. Our good apples are now dearer than oranges. Foreign fruit—strange to say—is cheaper in our great country than even apples of America. How happy it would be for the poor, if they could always have a supply of pure, sound fruit and vegetables, instead of poor or bad flesh.

Solon Robinson said, that we now have one sort of corn, which we can have, as like corn as possible, at Christmas and the year through. It is Stowells evergreen corn. It must be kept from frost and from damps.

The chairman.—I raised an acre of our Jersey sweet corn, which is much like the Stowell; but, in trying to keep it, I found much difficulty, on account of its tendency to mould. I lost much of it.

Mr. Robinson.—As to baker's bread, of which Mr. Fleet speaks, it consists of about one-third of pig-potatoes frequently. "What, in the name of common sense, Mr., are you going to do with that lot of pig potatoes—you can't wash 'em, except by using a skimmer. They are good for nothing. Ain't they?" "Go ask the baker—he can tell you what they are good for. They make the best Genesee flour bread. We are fashionable in our bread—it must be spongy, tough, and not acid, for we correct that by putting in some alkali."

We do not supply our people with grapes, nor do we preserve them. And I have seen hundreds, yes thousands of loads of peaches, rotting on the ground; no one to touch them, but some long-snouted hogs, who cracked the pits for amusement. Now a good peach opened and with sugar in the place of the stones, and properly dried, is better than a fig. It is excellent, and, while dry, keeps indefinitely. Of the common peaches, poor enough, our market has not one-tenth part of a supply. Nothing we can now speak of would be of greater advantage to the community, than a full supply of the good ones. We must consider this subject more, and speak again.

Mr. Fleet.—Nothing is so palatable as luscious ripe peaches. Fortunes are to be made of them yet. Let as much care be given to it, as Dr. Underhill gives to his grapes, and ere long the community can be supplied.

Mr. T. B. Catlin.—A lady in New Jersey preserves fine peaches in the style of figs. She scalds the peaches slightly, puts fine sugar in them, and gently dries them to the condition of good figs, and they are better than true figs. She preserves plums also, well. She makes as good citron out of the citron melon as the true. She uses pumpkins also with good results.

Homemade Figs.

(As manufactured by Mrs. Margaret Garretson, Sommerville, N. J.)

Peaches to be pealed, cut in two, the pit taken out; make a

thin syrup of sugar and water, put the peaches in while the syrup is warm or hot, and nearly boil for a few minutes; then take them out and place in a slow oven, till dry.

Pumpkin.

Cut in large pieces and boil, until soft, in a little water, (cover the pot and a very little water will do) stew them out close, so as not to loose the sweetness; take out with a fork and lay them on plates to drain and cool; afterwards dry them in an oven with a very slow heat, or dry them in the sun. When properly done, they have a pale, yellow look. When wanted to use put to soak the night previous to using.

Home-made Citron.

Melons (Nutmeg) when full grown, not ripe, and not soft, cut in squares, put into salt and water, made strong enough to bear an egg, for from nine to thirty days; when they turn yellow, take out and put into fresh water, to be freshened daily until the salt is all out. Then, to make them green again, put them into boiling water with a little alum, and keep it hot for a while, but not to boil; then take out and boil till tender, in water; afterwards boil with sugar, as with ordinary preserves, say ¾ pound of sugar to one pound of citron, until the juice is all absorbed or nearly so; flavor with lemon peel or lemon drops; take out and dry. if any liquor is left, it can be dropped on while the citron is drying. The cost is from 5 to 6 cents per pound.

The Chairman—In 1842 I called on a friend in Massachusetts, who had retired from his business in Boston. He took a cottage and a couple of acres of garden in the country. His physician had told him that his case was consumption, and his recovery entirely hopeless and impossible, and that he ought to make his will forthwith. My friend, however, took to his little garden, and as far as his strength permitted, amused himself with the care of flowers and fruits. He lived almost wholly upon his own fruits, with a little bread; he ate his own grapes as long as he could keep them. He lived in that way eleven years after the dotor's sentence of death.

The Secretary said that as to keeping of fruits and vegetables, notwithstanding all that has been published on this important subject, still a wise practice is not generally followed. As many other good lessons fall like good seeds upon barren soils, and yield no benefit, so have these.

It is perfectly well proved, that not only should fruits be handled with the care of so many eggs, but all vegetables, nor should they be piled upon each other in masses, nor tumbled out of carts, barrels, &c., like so many stones; and they should be kept in perfect darkness, except for an occasional opening to let in a moderate circulation of air. And especial attention must be paid to keeping them, as much as possible, at a low temperature, and always the same. We all know the bad effects produced by change of temperature.

The timbers driven into the mud of rivers nearly two thousand years ago, are perfectly sound now; nor is there a doubt that they will remain sound two thousand years more. The more we can approach a condition like that in keeping fruit and vegetables, the greater will be our success. At the depth of a few feet in the earth, anywhere, an even temperature is found. At one hundred feet below, vegetable matter which was buried by the deluge is found quite sound. Furniture and fire-wood are made from trees buried in swamps before the historic period of our world. These examples are fortified by the vegetable remains in Pompeii and Herculaneum. A vegetable has but little if any power to heal a wound, while the animal has great power to do so. We say, therefore, handle all gently, and keep all cool, and steadily so.

Chairman—We agree in the method of keeping a low temperature, dry and dark.

Mr. Scott—That is the true way.

Dr. Phelps—Great advantages result from perfectly uniform temperature.

Mr. Robinson—One of the best ways to keep apples is to put then into linen bags, and suspend them from the beams of a cool

room, one in which there is no fire. I have had them well kept in that way in a cold room in Connecticut, in winter, and they did not freeze.

Dr. Phelps said that his father's orchard contained, among others, a very fine Pearmain tree, which yielded forty bushels of apples, of an excellent quality, in one season. My father picked them by hand very carefully, and sold some of them for half a dollar a bushel. The residue he kept in a cool room till winter came; he then carefully removed them to his cellar, which was a dry one, and arranged them on shelves.

Solon Robinson stated that ripe peaches, peeled, sugared and dried, were better than any figs or other imported dried fruit ever sold in this city. He also related that he had seen apples preserved in a very low temperature, by picking them carefully from the trees, and putting them in a close linen bag, and suspending that to the beams of a room. Fruit should never be placed in damp cellars, and it should be excluded as much as possible from the light; so should potatoes.

The club agreed to continue this subject at the next meeting, which will be held on the 15th inst. It was also agreed to discuss the matter of the following letter, which was read by Solon Robinson, with notes of explanation, very much to the satisfaction of the members present. It is from a young farmer on the eastern shore of Virginia, dated Accomac, C. H., Oct. 15, 1853, and addressed to Mr. Robinson, as follows, excepting a few preliminaries and names:

Next year I intend to fourth my farm, (1) and wish a little advice as to the best mode of proceeding. As you know, the almost universal rotation here is, corn and oats alternately, the oat-stubble grazed, while a few third their land. Only two, the Hon. H. A. Wise and the Hon. T. B. Bayley, are fourthing. I shall be the third in the county, and on the shore, I believe.

My rotation is to be corn, oats, clover, wheat. Now, when shall I apply lime, [2] to the clover ley for wheat, or to the corn crop with my farm yard manure? The universal practice here is to apply it to corn land, but I hesitate to do that, as oats and guano

are to follow corn, and lime would act injuriously on guano. To be sure, for a year or so I shall guano my wheat, but only slightly. To oats I shall principally apply guano, for the purpose of getting a stand of clover, on which I shall rely in connection with lime, for the permanent improvement of my land. I am rather inclined to apply it to clover for wheat, but I prefer the opinion of some competent authority. At what time should it be applied, if applied to clover? before or after fallowing?

[3] Is it feasible to procure a good stand of clover with oats? The usual practice here is to sow clover on wheat, and some writers, I have seen, object to sowing it on oats; but it seems to me that it ought to do better on oats, on account of the fresh tilth of the ground; and in my case especially, as I shall use guano chiefly on oats.

Should the clover seed be harrowed and rolled, or simply rolled in?

[4] Would you prefer rolling wheat when plowed in, or leave it in the rough state till spring, and then roll it? My plan has always been, to follow the plow with the roller, and then roll it again in spring after sowing clover. Mr. Wise, who beats any of us making wheat, never rolls his in the fall. His argument is, that the furrow ridges and clods are a protection from the cold winds and winter-killing. He prefers having it as rough as possible. He is now putting in wheat on oat-stubble, and it is pretty rough you may be sure. I have left about ten acres of mine unrolled, to test it. I am also experimenting on wheat with various soaks and manures, the results of which I will send you.

[5] What do you think of a mixture of guano and ashes, in equal quantities? The verdict of chemists is against it I believe, but in one of my late journals I saw its effects spoken highly of. At what price could I obtain ashes in New-York, suitable for agricultural purposes? [6] What sort should I write for? My cartage would be a small matter, as I am within a mile of two or three wharves. They are a fertilizer too much neglected here, and used only to a small extent. How, in what quantities, and to what crops, should they be applied? [7.]

Is clover a cleansing crop? [8] Most of our lands on the sea-side of the Peninsula are, as you are aware, well set in *wire grass.* Do you think my proposed rotation, with a clover stand of 18 months, would tend to cleanse or foul the land? A great many have advised me that the clover, by its thick growth, would smother the wire grass, and thus act as a cleaner.

Do you think it a good plan to flush [9] our corn lands, in the fall, while the aftermath is comparatively green, and thus appropriate it as a green crop; or should they not be flushed till spring? I know it is in opposition to the received opinion [10] to plow light lands in fall, but may not the crop of weeds and grass compensate? One of our most successful practical farmers, in August of last year, was compelled to plow some of his grassy land, to keep his hands and horses busy, [11] as he had no carts for hauling manure, and the result has exceeded his expectation. When he reflushed it last spring, it was quite mellow, and he has had no trouble with it at all, and he thinks the effect equal to a dressing of farm manure. Would it not be a good plan to turn it in deeply—say bring up a little sub-soil—and lime it? Thus, by spring, the sub-soil turned up would, by the action of the lime, atmosphere and frost, be reduced, and mingled with the surface soil; thus gradually we might deepen our soil, which it greatly needs. [12.]

I intend, when I go to Baltimore next week to the cattle show, to purchase a vegetable cutter and a corn and cob crusher, the operations of which will, I expect, "surprise the natives." [13] There is only one crusher on the shore, and I am so much pleased with some experiments and calculations, I have been making on it, that I shall get one of them as soon as possible. I am satisfied that, with my force of six mules and horses, I can, in a year, save more than the cost of the crusher. I also tested, and was pleased with another use that might be made of it—to grind the hard lumps of guano after sifting it. [14] Mine will be the first vegetable cutter on the shore. But most of the farmers here are so far behind the rest of the world, [15] that I must diverge a little from them, and take advantage of the improvements, science and enterprise are making in our noblest of all professions.

Notes.—1. "Fourth my farm." Divide it into four equal parts, planting, with corn, upon which oats will be sown next year, the next it will remain in clover, and the fourth in wheat. So go the round, corn, oats, clover, wheat. Then commence with corn on the wheat stubble. The five field system is better, that gives clover after wheat. They have no permanent grass pasture or meadow.

2. "Where should I apply lime?" On the clover ley—never with farm yard manure, unless it is very coarse and well buried with the plow. You may apply it on the clover, and plow all in together, or on the upturned earth and harrow it in.

3. Yes, you can get a good stand of clover, upon your lightest land, with the use of guano.

4. Always leave your wheat land as rough as possible. Mr. Wise is right in his farming notions, if not in politics.

5. We think you will waste both. Ashes and guano must not be mixed. Guano and charcoal may—should be. Ashes will dissipate the ammonia of the guano, unless it is deeply buried.

6. No price at all. You cannot get them. They would be good if you had them, but not so economical as guano. That is the cheapest manure in this country.

7. Ashes may be applied with advantage to any crop, and any soil. They are most valuable upon light sandy loam, like that of the Eastern shore.

8. Clover is a cleansing crop. It is the best thing we know of to rid the land of noxious weeds and that troublesome pest of your lands, the wire grass.

9. Flushing land, is plowing it. We do not think it a good plan, to plow any land in the fall.

10. "Opposite to received opinions"—that is the reason why so few improvements are made in farming. Whenever you can turn in weeds and green crops of any kind, your land will be benefited, particularly if you use lime.

11. "To keep his hands and horses busy,"– That sounds singular to a Yankee farmer, but it is often the case at the South. Planters often are troubled to find something to keep their hands busy. In this instance, the accidental summer plowing taught him its benefit.

12. This is the very perfection of farming; turning up the subsoil, is equal to a good coat of manure.

13. It will astonish the natives of this latitude to hear, that vegetable cutters and cob-crushers are among the unknown things of so old a farming country as Accomac. No doubt you will save the cost of your machines every year.

14. This is a new use of this mill, and no doubt it will be worth while for some of the Virginia planters, such as Willoughby Newton, and Col. Carter, of the Northern Neck, who use, each of them, 30 or 40 tons of guano a year, to have a mill, not costing more than $50, that will grind the lumps, which are very hard and difficult to pulverize by pounding.

15. "So far behind the rest of the world." So much the more need of diverging a little from them. It is a pity, that a few more young farmers would not break over the absurd old customs of their fathers, and not continue to plow less than two inches deep, and plant corn and oats, oats and corn, one after another, with no other rotation, except wire grass and old field pines. The world is improving, and the spirit has reached Accomac county.

We shall have more upon this interesting letter, at the next meeting of the Farmers' Club.

Mr. Fleet remarked, that the letter from Accomac, just read, suggests many valuable ideas. He wished that members would come to the next meeting of the club, and answer some of the questions.

Mr. Robinson said, we should publish the letter, and answer the questions.

Question, on adopting the motion of Mr. Fleet, to employ the Farmers' Clubs of the third Tuesdays in March, June, September

and December, for agricultural statistics exclusively, was unanimously agreed to.

The club then ordered the 'Keeping of fruits and vegetables' to be continued as the subject for the next meeting, on Tuesday, November 15th, at noon.

The club then adjourned.

H. Meigs, *Secretary.*

November 15, 1853.

Present—Messrs. R. T. Underhill, Fleet, Robinson, Lawton, Randel, Kellogg, Lodge, Dunn of Newark, George B. Rapelye, Schenck of New Jersey, Judge R. S. Livingston, R. L. Pell, Gen. Chandler, John W. Chambers, and several others, strangers.

Richard T. Underhill, of Croton Point, in the chair. Henry Meigs, Secretary.

The Secretary read the following papers and translations, prepared by him:

REAPING MACHINES.

British Association for the advancement of science, August, 1853.

Report by A. Crosskill.

He gave an account of the invention of reaping machines, from their use by the Romans and Gauls, to the present time, with a view to show that though reaping machines had not been brought prominently to notice before the great exhibition, such implements had long since been invented, and that the reapers of Messrs. McCormick and Hussey were constructed on the same principle as those previously made in England. Mr. Smith of Deanston, made one in 1812, which has had improvements on it, and worked successfully, before the Highland Agricultural Society, in 1835. In 1822 Mr. Ogle of Remington near Alwick, invented another, which appears to have served as a model for McCormick, as it is in almost every particular the same as Mr.

Ogle's. They are useful in America, where labor is scarce. Above 2000 of McCormick's reapers were sold there, and Hussey's is in almost equal demand.

Their celebrity at the World's Fair, called out Mr. Bell, of Scotland, who had gained a prize in 1829, from the Highland Society for his reaper, to come forward again; and in 1852 he contested with Hussey before the Society in Perth, and carried of the prize, and his reaper has subsequently proved victorious. Bell's machine differs in several essential points from that of McCormick and of Hussey. In the first place it is propelled before the horses, which are harnessed to a pole in the centre of the machine, and not on one side. In the next place, the cutters act like large double edged scissors, which clip the corn, (wheat) as the machine is propelled into it, and a further advantage is, that it gathers the corn after it is cut, without requiring a man to rake it off, which is necessary in the two others. The arrangement of the self-acting gatherer, consists of an endless band of canvas, on to which the corn falls as it is cut, and it is then thrown on one side by a continuous motion of the canvas, as the machine advances. With Bell's machine, two horses and one man cut an acre and a half of wheat, per hour. Bell's costs more than McCormick's, being £40; while McCormick's and Hussey's cost but £20. Bell's cut better, and saves the work of one man, in gathering the corn.

[The Journal of Agriculture and Transactions of the Highland and Agricultural Society of Scotland, Oct., 1853.]

A Frenchman's account of the meeting of the Royal Agricultural Society of England, held at Gloucester, for 1853.

Founded only in 1838, and self-supporting, its ramifications extend over the whole kingdom. Among its life-members are found nearly all the aristocracy of England, and the elite of the country gentlemen. There are life-members, and annual subscribers; 1000 for life, and 4000 annual. With the dues, payments, journal, &c., the Society has an annual revenue of ten thousand pounds sterling, ($50,000).

At the Gloucester show, we had to pay at the door for admission half a crown, (over sixty cents,) to see the agricultural im-

plements; next day sixty cents more to see the animals; 50 cents for two catalogues. I found that each stranger coming to Gloucester Fair was at an expense of at least $20. A bed for one night cost half a guinea! At Gloucester, more than 40,000 persons paid for admission. The department for the exhibition of implements covers ten acres of ground. Crosskill's Roller, the Norway Harrow, Garrett's Drill Plough, cost from $200 to $300; his Horse Hoe, $80; Ransom's Plough, $20; Riddle's Scarifier, $100; Bentall's, $32; a Manure Spreader, by Garrett; above all, the Reapers; 12 of these machines; 23 steam engine machines. The 20 sovereigns for the best reaping machine not yet awarded. The American, McCormick, made the greatest talk in 1851; then Bell, the Scotchman, showed his in use already twelve years. Independently of its origin, Bell's Reaper has a real superiority over its American rivals. It costs more, (it is £42, Hussey's £15,) and is heavier. Steam engines for agricultural purposes are now made. In 1849, the best shown was Garrett's, 11½ lbs. of coal an hour for each horse power; in 1850, Hornsby's, 7.56 lbs.; in 1851, 6.79; in 1852, 4.66; this year, Clayton's, 4.32. Clayton's engine costs $1,100, six horse power. The rotary digger, to pulverize the soil and turn out the moles; one of the greatest agricultural implement makers is busy in making them.

The Cattle Show contained more than a thousand head. The best breeds of cattle are now generally spread over England. In 1851 they showed more than 1,200 head. The too great frequency of exhibitions and meetings, which take place at almost the same time in all parts of the kingdom, has caused a falling off at the great Gloucester Show.

The Royal College of Cirencester, a short distance from Gloucester, was founded in 1845, by a society under the patronage of Prince Albert, The highest names among the English aristocracy figure as subscribers, as they do also in the Royal Agricultural Society. The sciences connected with agriculture are there taught. Annexed to it is a farm of seven hundred acres, rented from Lord Bathurst. The buildings are arranged for two hundred pupils. Here is again a lesson which our neighbor gives us.

LEONCE DE LAVERGNE.

[Journal of Agriculture, and Transactions of the Higland and Agricultural Society of Scotland. October, 1853.]

We extract the following, relative to a singular prevalence of disease in turnips in that quarter. Report by Prof. Anderson, the Chemist of the Society, on the Disease of Finger and Toe in Turnips.

About forty years ago this disease was observed for the first time, and then in Berwickshire; later, in the Lothians. Its progress, which was first slow, has continued to increase until it has destroyed 10, 30, or 40 per cent of the produce; and in some instances, in a large field, actually not one bulb escaped the affection. Dr. Balfour and myself were desired to examine the subject—he the botanical part of the subject, and myself the chemical. I despaired of useful results, for, unlike the diseases of animals, especially of man, we have no means of tracing them through the different stages of their progress, except by their external changes.

We drew up a series of queries, and circulated them extensively among our farmers and proprietors, of 22 questions, to which few answers have been returned, and those very variable.

On a minute examination, we found, in numerous specimens three marked varieties of the disease:

First—The bulb much deformed, and lost its naturally rounded form. In place of a tap-root, the lower part has a number of excrescences, some long, some round, through which or among which a bunch of fibres is seen to pass. In some cases, in the early stage of the disease, this deformity is merely a slight thickening of the tap-root, or a small excrescence on one side of it; in others, a large group of protuberances surrounds the place where the tap-root ought to be, and sometimes the entire bulb is converted into an irregular form, often grotesque and extraordinary. The excrescence, when cut into, resembles in texture the turnip, but is usually harder and more woody. Sometimes a root or fibre no thicker than a thread runs out 6 or eight inches, and then suddenly swells to the size of a bean or filbert, whose texture is like the other excrescence. At a later stage, these excre-

scences are softer than the bulb, and become converted into a pulpy mass of decomposing matter; and in its more advanced stages acquires a greenish or bluish color, and exhales a nauseous odor, and forms a nidus for insect larvæ. The disease continues after the tubers are stored.

Second—The bulb keeps its ordinary form, but on the sides are one or more spots, from an inch to three or four inches in diameter, looking like warts, but rough, irregular, and but slightly raised above the skin. By cutting through one of these spots, we find decomposition there, and the bulb under the diseased spot soft, discolored and putrid.

Third—This I have only seen in Swedes turnips. It is an irregular, wart-like excrescence on the side of the bulb, brownish color; cut through, we find the bulb, for a considerable depth under the wart, has become *completely dry*, converted into a light, spongy mass, of a brown color.

The first of these diseases is the true finger and toe; the second is the Anbury.

I analyzed the soils where the disease prevailed, and I am of opinion there is no reason to think that the disease is owing to the soil or anything in it. I have analyzed the diseased and the sound turnips, and the difference is as follows:

	WATER.		SOLID MATTER.	
	Healthy.		Diseased.	
White Globes,............	94.18	89.88	7.15	11.94
Swedes,....................	90.07	87.15	9.91	12.85

The ashes of healthy turnip,........................ 0.78
do diseased do 1.48

The white globe turnip seems to be most commonly and severely affected, and Swedes generally least. The whites suffer first; yellows next; Swedes last, and that only partial. The softest suffer first and most. The disease shows itself from June to September. Insects are suspected as the cause, by many observers. Others think differently. Lime is recommended.

Revue Horticole. Paris, February, 1853. [Translations by Henry Meigs.]

EXTRACTS.—THE RAVAGES OF INSECTS, AND HOW TO COMBAT THEM.

It is said that nature has always placed the remedy alongside of the disease. That we do not profit by this is owing to our ignorance; and in fact our folly is often so great that we actually make war against the remedy. Let us reason on this interesting subject. God makes well all things which he makes. There must be good reason for that host of insects which every spring attack our forests, farms and gardens. There is not one of those little creatures whose history does not present to us something interesting for us to know, all working according to the measure of their form, size and strength. Their principal office seems to be to devour imperceptible substances disseminated in masses, then becoming food for larger animals, as birds, for example, who we find grow on the quintessence of the masses, vegetable and animal, beautifully extracted by the delicate, almost imperceptible, capillary trunks with which the insects are furnished. There is reason for the existence of every creature, and his presence in creation is for some good end. The equilibrium would be maintained among them if it were not for man. It is our interest to give unlimited extension to some of nature's works, and to annihilate others, if we can. Our object here is our own well-being. Man was made (incontestibly) to make use of all things, and in spite of our paradox-makers, his Creator has given him full power over all animal and vegetable creation—the whole are at his mercy.

According to the best statistics, France loses annually, by insects, *twenty millions of dollars!* This excessive multiplication of creatures injurious to us, is due to the vast extension given by man to the culture of a certain class of vegetables, more perfect, more juicy than wild plants—enabling myriads to feed well on them, and propagate their races. Man has broken the natural equilibrium, by his vast cultivation of vegetables and breeding of animals.

The writer enumerates such animals and insects as do not touch vegetable or animal food, but live on insects. He mentions the common bat as a remarkable destroyer; he calls it the twilight animal; it is the most voracious of the insects, which fly after sundown. The bottoms of the caverns, where bats have resorted, are found covered many yards deep, with a sort of guano, composed of the ruins of insects alone. The celebrated grotto of Arcy, some leagues from Auxerre, contains tons of it. Many vast caverns in South America present a like phenomenon. What ought we to do then? We should multiply bats—for we might by that means save millions of dollars—and the bat does us no harm. We have before said enough about saving those birds, which live on insects. Even toads and lizards help us in cleaning off insects. Here is a novel example of the usefulness of certain insects. Some years ago the old apple-raisers of England had their crops desolated by the woolly louse, which stuck to the branches, sucked out the juices and destroyed the trees.

In the beginning of July last, the apple-trees of a gardener near Leeds, were literally covered over with this woolly louse. About the middle of the month, all disappeared, leaving nothing but their wool behind them. The same phenomenon was found in other orchards, and in hop fields, infected by another kind of louse. What would be the cause of this? An abundance of lady-bugs or birds—as they are called—had devoured the whole of them. Now, these lady-bugs, or birds, ought to be multiplied. It is said, that the wheat-fly has an enemy smaller than itself, but, which destroys it by inserting an egg in the larvæ of the wheat-fly. Means ought to be sought for to multiply this friend of the farmer.

THE GRAPE MALADY, CALLED "OIDIUM TUCKERI."

Mr. Cappe.—This disease showed itself violently in the garden at Paris, in 1851. One third, at least, of the young branches of the vines died. One morning I was about to apply the recommended Hydrosulphate-Grison, but observing a white dust all over the leaves and grapes, proceeding from the tearing down old plaster in an adjacent building, I thought I would let it be and notice the result. The disease made no further progress, and my

crop was about two-thirds of one, and the grapes were fine. Now, in 1853, those vines are vigorous, in a perfect state of vegetation, showing no trace of the oidium. I hope that others will try the same experiment.

Mr. Gonthier Pere.—You are aware, that, when the grape has become sugary, the oidium will not touch it, but will attack the vine in its buds, leaves and stems of the ripe grapes.

[Extract from a letter to the Secretary, from Mr. Mundy, of Metuchin, N. J., dated November 8, 1853.]

I return, with interest, to the Farmers' Club, the Japan Peas received from you last spring. I had also directions to plant them on at least four square feet; but I found that they spread out their branches in such a way, as to require twenty-five in stead of four square feet. I planted them on the 27th of April last, and on the 20th of May, in order to help their growth, I gave them, by mistake, an overdose of Prof. Mapes' improved super-phosphate of lime. Those that grew up are fine. I send you one of the smallest, for I want to show the finest to my neighbors, who sometimes reproach me as *a book farmer*, having new-fangled notions; but it will soon be my turn to laugh. I send some carrots. Some of them are 29½ inches long and 13¼ inches round. I subsoiled the carrot land, as deep as I could.

My friend Mr. J. E. Van Gieson, brought from California a pair of their Quails, from which we have raised some, which, if we live, shall be exhibited at the Fair of the American Institute. I have succeeded in raising the soap plant of California.

The Japan Peas attracted strongly the notice of the club, the pods literally touching each other, in a mass. At the spring distribution of seeds, the club will be able to supply many cultivators with them.

Mr. Lawton—The turnip disease, as just stated from the Highland Society, certainly seems to be similar to the potato malady, in some of its symptoms, which are quite various,

Dr. Underhill—I think that ultimately we shall find that the disease is due to minute worms or insects.

As to the subject of the day—the Keeping of Fruits and Vegetables—suppose that there could be on sale, for a great length of time, rich, sound, delicious fruits, how vastly the sales would be increased! The number of consumers would be very great, and the habit of using fine fruit freely is of the highest importance to the health of mankind, the well known effect being a purification of the system, a refining of the blood, all that tends to give us pure health! I speak now as a physician, as well as an agriculturist. I speak for the multiplication of all fine fruits, as the grape, of which I am a grower to some extent. Our peaches rush upon the people in sudden masses. Some dozen years ago, we had in a day imported ten or twelve thousand baskets of them into New-York alone. Now we have got up to fifty thousand baskets in one day. If we could contrive to keep peaches a much longer time, the market would pay millions of dollars more for them than it now does. It is the same with all the delicate small fruits, the strawberry, raspberry and blackberry, one of our most delicious and wholesome fruits. Strange as it may seem, we have not an adequate supply. Farmers ought to turn their attention to it. I do most sincerely hope that discoveries may be made of the means of keeping and preserving our fruits, so that their use may become—not very partial, as it now is—but universal. West India fruit is supplied to us in good condition. A sound orange is almost always to be had, and at a price sometimes cheaper than a fine apple! This fruit business is a profitable one to the islands.

As to keeping fruits in good condition, I believe that an even temperature, above frost, seems to be indispensable; also, a storehouse, double-sided, filled in with charcoal dust or saw dust, or air only—an air jacket, as it is termed—all very bad conductors of heat. The fruits should be stored in them perfectly dry, and not too ripe. At the same time, immature fruit will not answer. No one would take the necessary pains to keep any poor fruit.

Mr. Lodge—Air should be excluded from the store house, and contact between the fruits carefully avoided. Sweat apples first in the barn, by covering them over with straw; then carefully spread them out to dry; then put a layer of dry sand in the bot-

tom of the barrel; on that, carefully, one by one, place a layer of apples; then another layer of sand, and so on, till the barrel is full. I have had in England, for apples so put up, four guineas for one barrel of them. Much is lost by sending abroad poor or bad fruit. I used to make a profitable business of sending fruit from England to France; and some of the finest pears can be sent a considerable distance, by due care as to their true condition. Our Newtown pippin apples, both the green and the yellow kinds, can be kept well. All fruit grown upon high ground keeps better than any grown on low ground.

Mr. Lawton—We see now large quantities of quite small red apples in our markets and streets, called Spitzenbergs. They were formerly of far larger size; their diminution is probably owing to the position of the trees.

Dr. Underhill—Probably the trees were allowed to be overloaded with their apples. That, of course, renders them generally small, not one-half the usual size.

Mr. Kellogg—There are two distinct sorts of the Spitzenberg apples. One is more tart than the other, and their colors differ. Grafting them on a different stock improves them sometimes, and they keep better.

Mr. Lodge—I have grafted as much as most men of my age, and the fruit is no better and keeps no better on account of the stock on which I grafted.

Dr. Underhill—The best Spitzenberg apple is the famous one of Esopus, the flesh of which is yellow, and the peculiar and rich taste of which is never mistaken. Grafts are somewhat influenced by their stocks, as sweet or sour, or *vice versa*; and a difference appears when they are grafted on natural stocks, and it is the usual plan to graft on seedling stocks, the character of whose fruits we do not know.

Mr. Fleet—Our widely extended commerce opens the way for immense export of fruit, if we please to avail ourselves of it, and our farmers and gardeners ought to try so to keep choice fruits as

to present them in perfect condition in foreign markets as well as our home markets. The knowledge of the methods of keeping should be everywhere extended. It is said here that apples keep well in bags made of linen. An elderly lady on Long Island used to keep her best apples sound in her garret all winter, by merely covering them up close with linen, and when she wanted some of them, she lifted the covering as little and as carefully as possible, when taking out some of the apples. They were never frozen in this method.

Mr. Solon Robinson.—We can grow peaches without limit, and that we can preserve them, I present here the actual proof. Here are good peaches, skins off, fine sugar put into the middle of the half peaches, and by moderate heat converted into an article very superior to raisins or figs. (Members tasted them and generally thought them quite superior to raisins or figs.) In the Western States I have known hogs to be fattened on the rich peaches covering the ground. Gentlemen find the preserved peaches agreeable. The juice which drains from them, while they are being preserved, is much better than any honey or any syrup I ever tasted. It has the delicious flavor of the ripe peach, which is lost chiefly in the common mode of cooking, to preserve them. This market would pay twice as much for such peaches as these, than they now do for raisins; but remember, Mr. Chairman, that I mean all this time, rich ripe peaches, preserved with the best sugar and by honest hands. I do not mean the trash for which the community pays until disgusted with the whole concern. Sir, few families would be without the true peaches, truly preserved. For the purpose of preserving peaches in this style, a stove-house, heated by steam to about two hundred and twelve degrees of Fahrenheit's thermometer—that is to the boiling point of water—should be erected. The peaches should be selected of the best sorts, and in a perfectly sound state. When the syrup flowing from the peaches, in the process, is found to be too much diluted, let it undergo evaporation, until the syrup is sufficiently dense: about one-sixth part of sugar is required.

As to blackberries—one of our most wholesome small fruits—our country abounds with them—we eat a few in the few days of

their ripeness, and all the rest, an incalculable amount, go to destruction. Why, Sir, standing on top of a stage to get a view in Indiana, on the river Wabash, I had within view more blackberries, than would fill this room, (85 by 25 feet and 13 high) rich, ripe, long, delicious berries. All over that country, Sir, wherever the forest is *deadened* down, or a road or a clearing are made there these rich blackberries crowd in. If farmers would take pains to preserve these blackberries and supply the market, they would make more money than by raising corn—Indian corn—at ten cents a bushel, which I have often paid for it—or six-pence, for which it has often been sold. Henry L. Ellsworth, formerly Commissioner of the Patent Office, has hired men to cultivate three thousand acres of his lands in Indiana, and contracts to give the men three dollars an acre, per annum. They raised sixty bushels an acre—thus a bushel of Indian corn costs Mr. Ellsworth five cents.

Mr. Randel, from Maryland, said, that fine peaches abounded there, and it was of great importance that we should be able to save those immense masses of peaches, lost for want of suitable means of preservation.

Mr. Robinson.—If you can do no more than to make syrup of them, you will do nobly. It is better, I repeat it, than any honey, and, when properly dried, the figs and raisins will have to make way for them on every table.

Mr. Fleet.—There is a great want of principle in the commerce in fruits. Poor, miserable peaches, poorly dried—dirt, insects and all—come to market, only to disgust discreet families, none of whom would ever be without a good article. Those who trade in them, seem to have no sort of care for reputation, and, in consequence, their ultimate profit is wretchedly small. Some few have established reputations for good articles, honestly done up. These always find a high market in the shortest time. How long the good reputation of Goshen butter has lasted! Acquired by a few makers of excellent butter, many years ago.

The chairman remarked upon the constant frauds practised by placing good apples at each end of the barrel and poor ones in the

middle. Honesty is the best policy, in life or death, and any honorable man can soon establish a reputation for his fruit, or any thing else, which soon will give him command in the great markets. He must havesome patience at the beginning: he must endure some difficulties at first, but soon reputation will be his, and unlimited sales of his articles at the highest prices. All falsehood in farming or gardening is blacker than in any other thing; and that man who makes false statements of the crops of his country, is a curse to it.

Mr. Fleet proposed as a subject for the next meeting, 'the Elevation of the Standard of Honesty in all Agricultural and Horticultural Dealings.'

Judge Livingston moved to add to the subject of the day, 'the Keeping of Fruits and Vegetables.' Adopted.

Mr. Randel presented an Osaga Orange from his hedge, in his Maryland farm, and desired Prof. Mapes to examine the juices of the fruit, to decide whether it has useful properties as a gum or glue. Mr. Randel has a mile and a half of this hedge, many of the bushes grown 15 to 20 feet high, bearing some 20 or 30 oranges each.

The club then adjourned to Tuesday, December 6th, at noon.

H. Meigs, *Secretary.*

December 6th, 1853.

Present—Messrs. Handcock, the Earl of Mountcashel, Prof. Mapes, Solon Robinson, Capt. Holmes, Mr. Scott, Dr. Harrington, Gen. Chandler, Mr. Chambers, Judge Van Wyck, Hon. John B. Scott, Mr. Tousey, Wm. Beers, from the West, and others—24 in all.

Samuel Fleet in the chair. Henry Meigs, Secretary.

The Secretary read the following paper:

PROBABLE EFFECTS OF VEGETATION ON CLIMATE.

The Bombay Geographical Society, in 1850, report some interesting facts in regard to the influence of vegetation on the amount and distribution of moisture, and consequent effect on climate.

It was early remarked by Humboldt that men, in every climate, by felling the trees that cover the tops and sides of mountains, prepare at once two calamities for future generations, the want of fuel and water. Trees, by the nature of their perspiration and the radiation from their leaves in a sky without clouds, surround themselves with an atmosphere constantly cold and misty. They affect the copiousness of springs, not, as was long believed, by a peculiar attraction for the vapors diffused through the air, but because, by sheltering the soil from the direct action of the sun, they diminish the evaporation of the water produced by rain. rain. When forests are destroyed with an imprudent precipitation, as they are everywhere in America, the springs entirely dry up or become less abundant. The beds of rivers remaining dry during a part of the year, are converted into torrents whenever great rains fall on the heights. The sward and the moss disappearing with the brushwood from the sides of the mountains, the waters falling in rain are no longer impeded in their course, and instead of slowly augmenting the level of the rivers by progressive filtration, they furrow, during heavy showers, the sides of the hills, bear down the loosened soil, and form those sudden inundations that devastate a country. These effects are remarked in India. At Dapoolie, the climate is much more hot and dry than formerly. Streams now dry up in December which used to flow until April and May. This is attributed to the destruction of

forests which formerly covered the hills in the neighborhood, now desolate and barren. In Southern Coucan, within the space of fifteen years past, the climate has been greatly deteriorated by the diminution of vegetation, and consequently of rain. The people of Pinang have memorialized government against the destruction of their forests, feeling sure that the result of its continuance will be the ruin of the climate, The dreadful droughts which now so frequently visit the Cape de Verd Islands, are avowedly due to the removal of their forests; and in the high lands of Greece, where the trees have been cut down, the springs have disappeared.

It is believed that the river Ohio is less uniformly navigable than it was fifty years ago, owing to the destruction of trees and bushes, which rendered the passage of rain-water much slower, and less of it, by absorption in the land, than now, when water runs much more easily, making quick rises and falls, and, in a dry time much lower water in the channels.

Let us heed this voice from Bombay—the opposite side of the globe!

Major Handcock, of the New-York Herald, presented the following paper:

PRESERVATION OF VEGETABLES.

M. Schettenmann, an agriculturist of Bouxviller, has just published a process which he has employed for the preservation of beet-root, and which is equally applicable to potatoes, carrots, &c. The plan pursued by him is described as follows:—"At the time of gathering the crop, I cut off the leaves, and having first strewed a layer of the ashes of lignites on the ground, place a layer of the beet-root on it, and then go on with alternate layers of ashes and beet-root until the whole are deposited; after which the pile is covered with ashes, to keep the roots from the cold, the air and the light. Where the pile rests against a wall or a partition, ashes must be thrown between it and the roots. For want of the ashes of lignites, coal or turf ashes may be used, or even dry sand; but the last named article is not so effectual in

absorbing the damp. This manner of proceeding prevents the roots from germinating, and consequently preserves them fit for use."

By the Secretary:

PUMPKINS AND SQUASHES—NATIVE AMERICAN AS WELL AS INDIAN CORN.

Dr. Harris, of Cambridge, has examined this question. Several vegetables cultivated here have been generally considered of oriental origin, and only brought here since the settlement of the country. The errors which have grown up with the lapse of time require to be cleared away.

Decandolle remarked that the species of the genus Cucurbita (a curved vegetable, translated first by the word Gourd, a cupping glass, originally a crooked horn,) ought to be worked out anew. The names pumpkin and squash are no longer used precisely in their original sense. In general they are fruits of plants belonging to the miscalled genus Cucurbita, as now restricted by Meisner and Endlicher. The illustrious Linnæus, following in the steps of his botanical predecessors, for whose errors he is not accountable, gave the names of Cucurbita Pepo and Cucurbita Melopepo, to those kinds of pumpkins and squashes that had been longest and best known. He added to the list one more old species, the Verrucosa, (warty,) and a new one, the Ovifera, (egg bearer, or marrow,) said to have been brought from Astrachan by Lesch.

Several more species are now enumerated in scientific works; some separated from the Pepo of Linnæus (the cucurbita maxima, *the greatest one*, and cucurbita moschata) and others more recently detected and characterised. Most of the pumpkins and squashes that are cultivated in the United States as articles of food, have been referred to the Linnæan species. Ever since the time of Caspar Bauhin, whose "Phinax" seems to have served as the basis of botanical nomenclature, it has been taken for granted, that pumpkins and squash were the Pepones and Melopepones of the Greeks and Romans, were not pumpkins and squashes; that the

latter were unknown to the ancients; that they did not begin to be known in Europe, until after the dicovery of America, and that they are natives of America.

He traces out, in this paper, a detailed account of the ancient vegetables; proves that the musk-melon is still known and cultivated in Greece, and that the modern Greeks call it *Peponi*, a word derived from the ancient name of the fruit.

That the monuments of Egypt, though containing the representations of many other plants, have none that can be referred to the peculiar products of which this paper treats; and writers on Materia Medica enumerate four kinds of cold and demulcent herbs, namely: those of the citrul (water-melon), cucumber, gourd, and melon, but make no mention of those of pumpkins and squashes, (the word Pumpkin is from the Swedish name for gourd—*Pompoen.*—H. Meigs.), which are inclosed in the list by modern physicians.

The common nomenclature of the cucurbitaceous plants, in the languages of Europe, has become very much confused, many of the names now embracing species and even genera, to which they did not originally belong. The European gourd, or calabash, originally a native of Southern Asia, took its names mostly from the Latin *cucurbita*. It was known to the ancient Saxons, and called by them *Cyrfoet*. Though long cultivated by the Romans, by whom, perhaps, it may have been carried to Britain, it was not generally introduced into Western Europe, until the time of Charlemagne (about the year 800), who greatly encouraged the cultivation of it. Tragus, who wrote in the early part of the 15th century, gave the first good figure and intelligent description of it. The French call it *Courge*; the English, *Gourd*; the Germans and Swedes, *Kurbis;* the Dutch, *Kauwoerde;* the Spanish, *Calabaza;* and the Portuguese, *Cabaca;* all which names are derived from *Cucurbita*. The old names *alobora* and *abobara*, by which it is known in Portugal, and the Danish name *Groeskar*, are of uncertain origin. *Zucche* and *Zucca*, the Italian names of the gourd, are probably derived from the Greek *Sikua*. *Citroncelle* was the old French name for water-melon, which is equivalent

to the English word *citrul*, and to the pharmaceutical *citrulla*. All these names were afterwards applied to gourds, pumpkins, and squashes. The Indians called the gourd, mentioned in *Jonah*, chapter iv, verses 7, 9, 10, *quonooask*. Several French missionaries in Canada mention the *citronelles* as being cultivated by the Indians. Early voyagers say, that the squash and pumpkin were in common use among the North American Indians, from Florida to Canada, and probably far west, and could not have been derived from Europe, even if they were not originally indigenous.

The Secretary read the following interesting article, on the Mammoth Tree Grove of California, from a San Francisco newspaper.

THE MAMMOTH GROVE.

Following up the creek for miles, we arrive at Vallecita, the most flourishing and lively business camp visited in our travels. Passing on, we reach Douglas' Flat, and soon are at Murphy's Camp, situated 15 miles north of this city. A notice of these camps with a brief description of the Union Canal—one of the most extensive and well built canals of the Southern Mines—we may give at another time.

Our course is now for the Mammoth tree, distant 15 miles from Murphy's. In company with two friends we start out on horseback at early dawn, and enjoy a cool morning ride. Our path, a well made road, lay principally through forests of pine, on a high range of hills, between the Stanislaus and San Antoine rivers. As we advance, the trees gradually increase in size. Within four miles of the tree a view of the surrounding and distant mountain heights presents itself. To the north and east, the peaks of the Sierra Nevada bound the horizon; to the south east, the high hills between the Sugar-pine and Tuolumne, are conspicuous; south, Bald Mountain rears its bare head; while the western horizon is skirted by the Bear Mountain range, (in times past, old bruin's retreat and home). From this height, steep and far down descend the hills around; beyond, front deep shaded ravines, other hills ascend, and others still, tumbled and piled on among these in a most promiscuous manner—some with summits

decked with lofty forest trees; others covered only with shrubs. Pursuing our way, the Mammoth tree grove is soon reached.

After partaking of refreshments, accompanied by Mr. Wm. W. Lapham, the gentlemanly proprietor of the grounds, we seek the far famed mammoth arbor vitæ tree—and well does it deserve its name. Its magnitude has not been over-estimated. Wishing to assure ourselves of it, we had taken a measure, and give the actual results of our measurement. The stump, now standing, is eight feet in height, and at the ground ninety-five feet in circumference. The tree was three hundred feet in height. It now lies prostrate and mutilated, though it fell not without a struggle, or without much toil and labor; and in its fall all other trees in its course shared its fate. Five men were 22 days in boring it asunder, using a three inch auger. For fifty-two feet upward the bark had been stripped off in seven sections—two of six feet and five of eight feet. The bark is from fifteen to eighteen inches thick. A cross section, the whole diameter of the upper surface of the stump, two feet in width and ten inches thick, has been cut out and boxed up, and is on its way below, to be taken to the World's Fair. Nothing, we believe, but this cross section block would convince our eastern friends of the magnitude of the tree. The bark resembles the cedar, but the wood is different, and resembles more the finer quality of the redwood, and is called arbor vitæ. Upon the face of the stump the age of the tree is given, the many circles denoting that nearly three thousand years have elapsed, since it commenced its long career to greatness. How many of Nature's changes must it have witnessed! How many furious storms has it withstood! But now, in the perfection of its parts, in the maturity of its manhood, it has fallen by the hand of man, who alone af all created works was capable of admiring and apreciating its magnificent proportions.

From this our course leads to the mammoth arbor vitæ that was. This mammoth of the past exceeds in magnitude all its descendants of the present generation. It lays nearly stripped of its bark, its limbs broken off, and its heart burned out. We enter the lower end of the trunk, whose entire circumference (a portion being buried in the earth) could not be measured, but estimated by its diameter, it must have been 110 feet. Its inner diameter,

throughout the whole of the cavity, a distance of 250 feet, averaged from 10 to 12 feet. With your horse you enter and ride this whole distance of 250 feet; then turn around and go out at its side, or ride down again. This, we were informed, had been done here. Judging from its diameter at the height of 275 feet, and from the proportion of its various parts, it must have been 400 feet high.

The mammoth tree still standing is near by. The fire has consumed a portion of one side, rendering its trunk imperfect; but its outlines near the ground are distinct, and its circumference is found to be 97 feet—two feet more than the one cut down; its height 350 feet. Not far distant, the *Trio Sisters* stand side by side, in fair and equal proportions, with a united circumference of 92 feet, and 300 feet in height, the middle one rising 200 feet before putting forth her first branch. The *Mother and Son*, side by side, are near neighbors to the sisters, both with noble forms. The mother, with her head elevated some 30 feet above her son, has an altitude of 300 feet. The *Siamese Twins* are in the same neighborhood, with a circumference of 90 feet; then, independent, they emulate each other in towering aloft, reaching to the height of 325 feet. The *Beauty of the Forest*, last though not least of those we describe, surpasses them all in the symmetry and perfection of her proportions, being 92 feet in circumference and 360 feet in height.

There are eighty-five of these mammoth trees scattered over an area of fifty acres; hence we have named it "The Mammoth Arbor Vitæ Grove," believing that in magnitude these trees surpass all others in the world. Interspersed among them are pines, balsams and cedars. The soil is moist, dark, rich and luxuriant. Strawberries, whortleberries, gooseberries, currants and filberts, in their season, are found in profusion. The mountain air is cool and invigorating, and with the pure, living spring water, and the extensive improvements Messrs. Lapham & Smith are now making, the place we have described will be a most desirable retreat for amusement or health.

In the evening we returned to Murphy's, delighted with our visit. From Murphy's we turned our course to the mammoth cave. This cave is about nine miles north of Murphy's, on the same range of limestone as the Natural Bridges. It is an extensive cave, with many apartments—new ones having been recently discovered—and it bids fair to outrival its far-famed Kentucky brother. This, with a description of our visit to the Table Mountains, (differing in form and structure our Table Mountain) and a view of the Falls of the San Antoine River, said to be 500 feet in height, we may furnish at another time. Judging from our limited survey and knowledge of California natural wonders, we believe she will yet be found not only to surpass the rest of the world in the extent and abundance of her gold, and the magnitude of her trees, but in her Natural Bridges, her Mammoth Caves, and her Niagaras."

The chairman called up the subject of the day, viz: The best method of preserving fruits and vegetables, and frauds in packing fruits for the market. As to the preserving of beets, and other vegetables, in ashes of wood, or of turf, or of coal, as suggested in the article presented by Mr. Handcock :

The Earl of Mountcashel remarked, that, if common vegetables were in fact so preserved, he supposed that some fruits might also be kept in sound condition. As to the article on climate, as affected by forests, he said the fact seemed well established, that climate was materially changed always by the clearing away of heavy forests. This Society has done well to give general notice, that we, on this side of the globe, may learn to be careful of the trees.

Professor Mapes was requested to say something on the questions of the day.

Mr. Chairman. As I was not aware of the subject of discussion for to day, until this moment, I am, of course, unprepared to offer anything except such remarks as most naturally arise in the minds of all present. Before entering upon the subject proper, permit me to offer some general remarks, embracing the principles

necessary to be understood in the preservation of fruits, for the purpose of making a platform on which to found our modes of action. Apple and other fruits, containing a large amount of water, in which is held in solution the different proximates, and these undergo a variety of changes, some of which are favorable to the preservation of the fruits, and some incidentally to their decay. Those changes, therefore, which produce decay, should be avoided.

The Professor then gave all the facts relative to the acetous fermentation, the methods of avoiding it in the drying of fruits, &c. He referred to the necessity of adopting such processes as should not abstract the aroma from fruits. He stated, that, if the fruits be buried in the soil, the alumina and carbon of the soil would abstract the aroma and render the fruits nearly valueless.

Indeed, plaster of Paris, cotton, cotton cloth, and many other substances, have that power to a very great degree. Thus Isabella grapes, preserved in cotton, will be protected from the deleterious effect of the moisture given off by the grapes, but they will lose their aroma so completely as to become valueless. He also spoke of the oxidation of the sugar in fruits, and of the different properties of cane and grape sugar; the propensity of the one to attract moisture and thus to render the solution more dilute. He spoke of the exposure of a broken apple to the atmosphere, turning it to a brown color, in consequence of the sugar of the apple combining with the oxygen in the air and changing it to that state, known as treacle or molasses. Thus an apple ground to a pommace, exposing its surface to the atmosphere, would change color, and the expressed juice would be colored, and have that peculiar flavor, which we know as belonging to cider—but, that if a whole apple be suddenly pressed, the juice would be white, have the true flavor of the apple, and quite unlike that of cider. That a Toggle Joint Press might be made with a hopper, admitting one apple at a time under a Plunger, through which the juice may be expressed, and that cider from juice so procured, would be of superior quality; for, although the intestinal commotion of the fluid mass by fermentation, will cause its particles to come in contact with the atmosphere, they would be different; with a

small amount of carbonic acid on the surfaces, preventing immediate contact of the atmosphere to a full extent, and thus the cider would be lighter colored and finer flavored.

He spoke of the superior qualities of fruits dried rapidly, compared with those prepared by slower processes, by which a larger amount of their aroma is retained; the acetous fermentation is prevented, and the fruit not so much darkened by the operation, as when more slowly dried.

He described the apparatus now in use by the American Phalanx, of Monmouth county, New Jersey, by which they are enabled to dry *Okra*, while it is in the unripe state (that is, proper for working); also, green corn, Lima beans, young green peas, peaches, apples, &c., &c.; and that the vegetables and fruits, so treated, readily swell to their original size in cooking, and have their true flavor—a very superior result over the ordinary methods. This is done by placing the young fruits and vegetables in drawers with bottoms of wire, or any thing which will let air pass freely; these drawers are placed in a wooden chimney, at the bottom of which a blower, revolving with great rapidity, causes a strong stream of pure air to pass through these drawers—a moderate heat being supplied to the blowers—the vegetables and fruit are rapidly and perfectly deprived of all their water, and come out in fine condition. He spoke of the valuable uses of the vacuum pans, invented by Howard, in which the juices of fruits could be evaporated to a *solid extract*, at a *low temperature*, without the admission of atmospheric air, and without material loss in *color* or *aroma*, &c. He also detailed the various processes established in France and elsewhere, for preserving fruits, &c., by placing them in bottles, in hot water, heating them sufficiently to drive off the excess of atmospheric air, and then instantly closing the bottles, to prevent air from returning to the fruit. He mentioned the late Mr. Downing's American figs, made of rich peaches—heretofore spoken of. That Mr. Browne, of the Patent Office, at Washington City, exhibited to him last week, American prunes, made of plums, in the State of Maine—superior in quality to any imported from abroad.

The Profesor gave at full length, the whole scientific rationale of the process of preserving fruits and vegetables. He adverted to the successful methods adopted by Mr. Pell, of Pelham, to export to Europe, in perfect sound condition, very large amounts of his best apples. It would be difficult for us to render justice to the very valuable remarks of Professor Mapes on this occasion. He spoke nearly an hour to a most attentive audience.

Solon Robinson.—My object, Mr. Chairman is, as far as I can, to bring before the American people, the high importance of a full supply of the best fruits—and the best way to keep up that supply, when their freshness has passed—for the duration of fruits is limited to a narrow period of time. And the vast inducements to do this, on the great scale are two—first their admirable influence both on health and pleasure, more than Hog and Hominy—and their valuable commerce. Sir, we might easily have more in the world's markets for our best fruit, than we now have for our so much celebrated Cotton Crop. Go through our country and see how few good apples are saved—behold the world of peaches lost, or as good as lost by the wretched attempts made to preserve them.

Mr. Robinson gave an amusing account of the manner of drying and cooking peaches at the West. Four or five little walls of stone, say six inches thick and twelve inches high, are made six or eight feet long and covered with flat stones, the cracks stopped with clay. This is a drying kiln. The peaches, unripe and unpealed, halved and the stones taken out, are placed upon the top and a fire built underneath. If too hot they burn, and hot or cold they have no protection from the smoke and dirt, and when finally dry enough to pack away, are one-half of them acrid, bitter, tough bits of substances strongly resembling half-burned sole-leather. When cooked, as they frequently are, by simmering a few minutes in an iron pot, they resemble the same substance, and are about as palatable as that would be if parboiled. Dried peaches ought to be gently stewed twelve hours. Instead of that, they are often served up with only half an hour's soaking and boiling. In some of the best fruit growing regions of the West,

you could not find a single taste of anything but hog and hominy,* in many a house, except in the bearing season. It would be a blessing to the country, if we could teach people to preserve and eat more fruit. As a profitable crop there is no other to compare with it; and yet, as Professor Mapes tells us, men, within reach of this city, are still foolishly trying to compete with the West in raising grain, while they buy fruit for their own consumption.

Professor Mapes—A French mode of preserving is considerably practised, which is simply to seal up fruit in cases or bottles, from which the air has been driven out, by placing them in hot water. The best prunes I ever saw, were made in Maine. Charles Downing, of Newburgh, makes peach figs, which are delicious.

Mr. R. C. Pardee—Wayne County sends half a million bushels of apples to market, and a very large amount of dried apples and peaches. Drying the fruit is the work of women, and is carried on in the rudest manner, and generally unripe fruit, particularly peaches, is used for drying. This is because the unripe is easily dried and looks whiter and nicer, than that made of ripe and better fruit. He states, that the fraud in packing fruit is partly owing to the ignorance of farmers, who do not even know the proper names of their own fruit. They seem to possess no knowledge of the best plan of preserving fruit in any of the various forms.

The Chairman reminded the club of their resolution as to employing the second Tuesday, hereafter, in the gathering of statistical information.

Prof. Mapes proposed a committee of three, to obtain such information, and to report it to the Club in 90 days. That nothing valuable could result from an ordinary meeting of members, unprepared with reliable statements. If any good can come of it, it must be from a competent and meritorious committee.

Mr. Robinson seconded the motion for a committee.

The Chairman appointed Messrs. Robinson, Meigs, and Mapes.

* Hominy is Indian corn very coarsely broken.

Mr. R. C. Pardee—Wayne county, in this State, where I reside, has supplied the markets, half a million of bushels of apples in one year, and thousands of bushels of peaches, in large quantities, are dried in a very poor way—for market—unripe, bad—no matter what—all go. The Spitzenbergh apples—I have received good at tops and bottoms of barrels, and other poor sorts in the middle. It was necessary to stand by and see the apples packed, if you would have those that are fit for use. The price is lowered and sales lessened by these wretched proofs of carelessness and fraud.

Prof. Mapes observed that the best plan would be to raise none but the best fruit, as Mr. Pell does, and obtain the best prices. He has always, we believe, six dollars a barrel for his crop, which is a very large one—and he raises only one sort for sale—which is probably the best plan.

Mr. Robinson proposed for our subject, "Frauds committed in packing fruits for sale, and the huckstering in New-York markets."

Prof. Mapes proposed to add, "and the trouble given to farmers and gardeners, who attempt to sell the products of their own farms and gardens in the public markets." Adopted.

The club then adjourned to Tuesday, the 20th of December instant, at noon.

H. Meigs, *Secretary.*

December 20th, 1853.

Present—Messrs. Holmes, Livingston, Pardee, Solon Robinson, Elihu Smith, of Albany; Lawton, of New Rochelle; Professor Fowler, Judge Scoville, Judge Van Wyck, Gen. Chandler, John W. Chambers, and others—24 in all.

Hon. R. S. Livingston, in the Chair. Henry Meigs, Secretary.

The Secretary read the following paper and translation, made from the latest works received by the Institute, viz :

Dr. Cleghorn states, that after the burning or clearing of a forest in India, there invariably springs up a new set of plants, never known there before. We observe the same results in North America. India has always been covered with a population more or less civilized, and in vast numbers, while America has never been populated at all, comparatively. The singular results here or there excite a high degree of interest. All the theories given out are unsatisfactory. One says the birds do it! How long will the seeds of the trees live, when dropped by birds on the surface, and exposed to the weather for one season? Do we find a sound seed of any tree, which has lain one winter exposed to the weather? Are not almost all seeds very perishable? Who buys last year's nuts?

Seeds buried at a great depth are found to germinate. But who buried on the surface the seeds of the new forest, which succeeds the old ones in populous India? We throw out these hints, in order to induce citizens to examine closely their growth of new plants and trees on the clearings of our country, and to have the kindness to send to the Club all authentic information, relative to it, that we may compile something reliable upon this curious and interesting subject. We add our desire, that close observation be also made on the growth of new plants on old cultivated farms. What agency has there been at work to re-plant it--what lapse of time after it is deserted, before it becomes re-planted?

EFFECTS OF SEVERE FROST ON TREES.

Professor Leconte made observations on this subject during the severe winter of 1850–51. He found that even roses, pines and other plants, which had been frozen so hard as to snap off like pipe stems, were not injured by freezing so intensely. After a series of experiments on plants, such as the Elder (*Alder Sambucus*), with its tender pith, which one would naturally suppose must be readily and much affected by intense freezing, he was forced to come to the conclusion, that freezing had little or no effect upon them. Trees in Canada, Maine, and Hudson's Bay, have been known to have been frozen, so that the physical qualities of the wood appeared to be altered, and yet the trees lived and flourished with

unabated vigor, on the return of warm weather. Erman, Humboldt, and others, have abundantly proved, that in Siberia the ground is frozen to a great depth, so that the fibres of the roots, and the roots themselves, must be solid icicles. Indeed the larches there not only have their roots resting on a frozen substratum all the year round, but are themselves frozen for nearly eight months in the year. Large portions of both Europe and North America support extensive forests of birch, spruce, larch, Scotch fir, etc., where the ground ice is perpetual."

Mr. Meigs.—How did those roots, solidly frozen, penetrate the soil, solidly frozen? It is almost as hard work to penetrate hard frozen earth as it is to penetrate stone.

And the trees, now growing in this manner, are by no means old—many of them, of course, are young. I have not met with an answer to these questions. That the delicate hair like fibres of a root should penetrate hard frozen earth, is a curious affair. Yet the roots are there.

Farmers' Magazine, London, Nov. 1853.

DISEASES OF THE VINE.

We quote not for the grape so much as for the general malady, which has for a few years past fallen on several of our most important vegetables.

"Epidemics have become more prevalent, or, at least, they excite more general attention. The potato blight established itself throughout a considerable part of Europe, in July and August of 1845. The vine, however, then appeared to be exempt from any serious malady, either in the open air or under glass. The mildew, now so minutely described by microscopists, was little observed till the autumn of 1846, when a phenomenon occurred on a very fine West St. Peter's vine, which is judged to be worthy of record. That tree, covered with a capital crop of its most rich, tender-skinned clusters, extending through a vinery 36 feet long, had here and there a single ripe berry in a cluster cracked, and in a few hours the edges of the wound were coated

with a thick white mould. In October the crop fully ripened, in the face of morning fires and air; whole clusters which were apparently sound over night, were destroyed by sunrise, and nearly the whole crop lost. After some further remarks. *Where are we to find an adequate substitute?* It is true, that the British "sweets," called wines, are abundantly sold everywhere, but they are objectionable; they are deficient in grape sugar and tartar (the bi tartrate of tartar of argol) both of which are natural products of the vine. Grape sugar is easily made, and may hereafter come into extensive use. Argol, or cream of tartar (thanks to 'McCullock's Scientific Treatise on British Wines'), can be advantageously used in every process for domestic or general manufacture of wine.

So long as green, unripe grapes were attainable they were preferred above every other fruit; but they failing, the best and most natural substitute would be the leaves, tendrils, and young, juicy shoots of the vine itself. *Grape Leaf* wine, on the authority of McCulloch, is little inferior to wine made from the fruit. The leaves of the Claret grape acquire a deep purple color in the autumn, and from the infusion of these in boiling water, combined with the juice of the crushed ripe fruit, a very superior red wine has been repeatedly prepared. Among fruits in general are the damson and black bullace from either of which, alone, or with the infusion of the claret leaves, a red wine would certainly be made, superior to much of the doctored trash vended under the name of Port. The Orleans plum has also been highly spoken of. The juice of cider apples fermented with that of the damson would form an agreeable, dry, red wine. The list of available substitutes for the grape might be considerably enlarged; but it will suffice to mention the expressed juice of the giant rhubarb, which would yield wine in excess, so prodigious is the growth and rapid increase of the plant. It naturally contains the Bin or super oxalate of potash (often termed "Salt or Sorrel,") and malic acid, in combination with lime. The addition of argol (Tartar of wine,) would promote the vinous fermentation. The flavor of the wine when completed, and perfected by age in the bottle, is somewhat peculiar, and may be thought, perhaps, some-

what like that of the cocoa nut. The great vice of our British wines consists in the superabundance of cane sugar, unbalanced by the natural leaven or ferment of the juice. It thus remains as a "sweet," not convertible in vinous alcohol by age. Hence the insalubrity of such wines.

CONSUMPTION AND SUPPLY OF BREADSTUFFS IN ENGLAND.

Complaint is made that the importance of agricultural statistics is not appreciated. We ought to know (next year) what our home supply and consumption are, so as to govern our imports. In 1855 we shall know the deficiency of our crop of 1853!

We are adding to our food new articles. We now have an import of ground nuts (pea nuts) from Africa, increasing at the rate of twenty per cent per annum. A very large increase of consumption of Indian corn—not so much from necessity as from choice, and there is every prospect of greater increase as prejudice gives way to common sense in the domestic circles of those who really constitute our bread-consuming population. This has been experienced in America; for there, although farmers are becoming more wealthy, they are consuming more Indian corn—partly from improved methods of manufacturing and cooking it. More oat meal is now used in England than formerly; more rice, peas and beans ground up with barley and oats, to supply strength for labor. Pea or bean meal are two and one-half times more nourishing than wheat bread. We have cheese from America which is a conversion of Indian corn.

It has been estimated that we consume about six bushels of wheat per head per annum. Taking the population of the kingdom, in round numbers, at thirty millions, this would give a consumption of twenty-two million five hundred thousand quarters equal to one hundred and eighty millions of bushels. Our present crop is deficient about a quarter, so that we want about forty-five millions of bushels. American cattle consume more breadstuffs than the English people. The product per acre in America

is small compared to that of England. Their crop this year is an extra two bushels an acre on the twenty-five million of acres planted by them, or *fifty million of bushels increase.*

Importations of English cattle into the United States have become frequent and important. A few years ago the taste ran upon horses—blood horses were all the go. Priam, Glencoe, Monarch, and horses of that stamp, were eagerly bought for America, at enormous prices. Fifteen and sixteen thousand dollars for a single animal; now cattle follow. The county of Westchester, especially, has become eminent for its numerous and superior breeds of imported stock. Among the earliest importations into that county, were some noble cattle from Holland. They were beautiful in shape, large, and good milkers. These have been crossed with the Durham, and a breed known as Dutch and Durham is scattered over the county. Old Mr. Bathgate, who lives there, and who has been engaged in the business for half a century, speaks of them as being amongst the best for milking. Stock of the Alderney, Ayrshire and Devon breeds, have been imported by other gentlemen; but importations of the Durham have been most numerous, and where the pasturage is good, they are considered the best stock, not only for the dairy, but also for the shambles.

Colonel Lewis G. Morris, the late Chairman of the Agricultural Committee of the Institute, who resides there, has been very active in the busness of importing good stock, not only for the dairy, but also for the shambles. His sales of cattle have attracted a great concourse of people, and large prices have been paid

Revue Horticole. Paris, Oct. 1853. [Translated by H. Meigs.]

THE DOUBLE FLOWERING PEACH OF ISPAHAN, PERSIA.

The tree is sufficiently well known as to its flowers, but not as a fruit bearer. In fact, its rose like flowers whose beauty and abundance are so great, are succeeded by fruit. The one we speak of in the nursery of the Museum, has borne, this season, between 150 and 200 peaches. They are, to be sure, not so good as our best peaches, but nevertheless very agreeable to the palate. This peach is very downy on its skin; it is very deeply indented, of a

roundish form, and about seven inches in circumference; its stem cavity very deep—its flesh white, reddish next the pit—slight aroma—quite a fine taste—very juicy—ripens about the last of September. The skin of a whitish green.

THEORY OF GRAFTING.

Experiments by Mr. Gaudichaud, to determine the theory that the *radical fibres descend from the leaves to the graft!* He uncovered a root of a poplar—cut it in two and put the ends together —securing them in that position—then surrounding the cut spot with moss, and then covering the whole with earth. The graft succeeded and the root united. According to the Phytonian [vegetation] theory; these are the radical threads which descend from the leaves and come in contact with the lower piece of the root, penetrate between the bark and the wood, and then go down to the end of the root.

Now, according to my observation, this is not the case at all. This is what I comprehend about it, viz: a part of the utricular [cells] tissue is formed around each cut end of the root—these cells have been called the generating bed—the upper one stronger than the lower one—this is, however, of no importance. Arriving at con tact with each other, their growing tissues, they solder together the whole or part around the *cut ends.* Inside of this fibrous-vascular (*vascular* or *air vessels*), fibrous air vessels—in the same way that excrescences are formed on wood where the bark is taken off—and new bark is gradually formed.

We borrow, with pleasure, the following from the Imperial and Central Agricultural Society of France, and apply it to ourselves;

NOTICE.

To contributing Members and others:

Every year this Society addresses you, and asks from you such facts, as you can give us, as to crops in your neighborhood—*from your own personal knowledge.* We wish a report from you as soon as you can give it.—we will prize it much. May we count upon your zeal in thus contributing valuable information for the good

of the people. Believing that you will help the good cause, we give you our thanks before hand.

Accept the assurance of our distinguished consideration.

Signed by the

PERPETUAL SECRETARY.

[London Artizan, Nov. 1853.]

GRASSES WHERE NO SEED WAS PLANTED FOR CENTURIES.

In an article upon Agricultural Engineering, which points out the method adapted to reclaim a bog meadow—by leading streams of water to it—conveying manure in fluid—sweeping all manner of it into the streams of water. The effects was to cause moss, heather, gorse, rushes, and weeds, to decay and become vegetable mould, and sweet grass [these grasses were never known there before] to take their places. This grass continues to improve; the chief part of it is Dutch or White clover; yet, singular to say, not a seed was ever sown on that land. In one place in the valley the bog was so soft as to be utterly impassable, and the rushes two feet high. The character of the soil changed, so that a ton of hay was soon got off an acre. The soil, stripped in the course of ages from the side hill, had that of the valley restored to it.

Mr. Pardee.—On the subject of the day, I state my experience in the fruit trade is of about twenty years past; in which period I have been well acquainted with the difficulties which are attached to it. The county of Wayne sends to market, annually, about *five hundred thousand bushels of fruit*, including dried fruit. The dried peaches and apples are 50,000 bushels of the amount. The farmers get small prices and take the smallest amount of care and trouble—they get two shillings a bushel. They cannot afford to select and hand-pick the best for that amount. Therefore the trees are shaken and the fruit injured by the fall on the ground. They cannot afford to sweat them, so they barrel them up without. They have acquired the habit and do not see or feel the advantage of always sending to market perfect fruit, and getting six dollars a barrel for it. Reputation, which would sell every barrel of the *man's famous apples* for six dollars, instead of

twelve shillings—is not cared for, nor understood. We have in Wayne some apples of high merit. I name one of the Northern Spy, a seedling of some years past, in East Bloomfield, in Ontario county. This spy has been multiplied by grafts, many thousands. Here is a model, beautifully executed, of this apple, from the cabinet of the American Institute, by Mr. Glover· By looking at this model, you will always recognise the original Northern Spy apple, at first sight.

I will bring some of that fruit to the next Club, that members may taste. It can be kept till April. We have in Wayne four or five kinds of very fine apples.

Professor Norton, of Yale College, said, that he had never seen so noble a fruit garden as Wayne is.

It is deeply to be regretted, that our farmers will not follow the example of R. L. Pell, of Pelham, whose great orchard finds over demands for its apples, at six dollar a barrel.

Samuel Fleet considered with Mr. Pardee fully, as to the true causes of the supply of poor fruit in our markets. Low price, want of care, no regard to the establishment of high reputation. They therefore load up for markets masses of poor fruit. A single farmer cannot afford to go to market to sell his crop of apples—is it not large, and he has something to do at home. He, therefore, is glad to have the middle man come to his door, bargain for his apples, shake them down, barrel them and carry them off, paying the farmer his two shillings a bushel, in cash. What should we do without these middlemen? It is not worth while to find fault with them! We should, if possible, try to raise the intelligence and the standard of honesty; that so the farmers and the middlemen shall have good prices, and the public the finest fruit.

Mr. Pardee.—I saw in the city, yesterday, noble spy apples, spoiled by careless handling—what a sacrifice? We have another fine apple, called the melon apple. Here is Mr. Glover's fine model of it. I have been on a committee to decide qualities of fruit, with the late Mi. Downing, at the Fair of the State

Agricultural Society. We found four or five sorts of fall pippins, various in their flavor. Some of our largest greening trees, yield from fifty to sixty bushels each.

Chairman.—Do we not find apples in our markets, which much resemble the northern spy?

Mr. Pardee.—There are some, but the northen spy is so strongly marked, that one who knows it cannot well mistake it.

Mr. Robinson.—The Baldwin apple is a fine one here, but poor in the Western States. As to the subject of the day, I think that the frauds in the fruit trade are not so much the fault of the growers as the system of trade. The country is overrun with fruit speculators, who buy the apples on the trees, order them put up and sent forward as rapidly as possible, and in just such order as they think will afford them the quickest sale at a moderate profit. Farmers cannot afford to send their own fruit to market, and they have no interest in putting it up to keep well, as they get no credit or extra pay for extra care. Professor Mapes was to have been here, and he can give us the best information as to the market troubles of our gardeners and farmers. Here is our worthy friend Mr. Lawton, who cannot sell his black berries in market in person! He must sell them at some corner grocery—Snook's perpaps.

Our middlemen too deal in all our animals of which we consume in the city twenty thousand in a week. These dealers make a profit sometimes of ten per cent. The cattle brokers get two and a half per cent for selling. The sales of a Monday amounted to something like one hundred and fifty thousand dollars.

Mr. Turell.—And there is another sale on every Thursday of animals.

Mr. Robinson.—Yes, of what were unsold on Monday chiefly. As the farmer who raised the animals does not always appear. we know the middlemen only.

Samuel Fleet.—Middlemen are necessary agents in all trade. I think that those farmers who have fine fruit to sell, honestly selected and packed would find it profitable to advertise exten-

sively in proper papers. That would bring them the right sort of buyers. And farmers can sell to good grocers fine fruit profitably. Let them study a little more the character of the times we live in. We cannot do anything to embarrass trade—it must be free, perfectly so. Let the middlemen go to the farmer, and let the farmer come here and find every possible facility to trade. Let the standard of honesty be raised, and the quality of articles be rendered of the highest order.

Mr. Pardee.—Our Indian summer comes in the fall when our apples are being prepared for market. The farmers do not sweat or select their apples, and in consequence great quantities spoil. One of our commission houses of fruit, lost lately by spoiled fruit fifteen hundred dollars. I put up carefully fifty barrels of good apples, which brought me in February, three dollars a barrel.

Mr. Robinson proposed for the next subject, *Fuel*, which was adopted by the club.

Judge Livingston presented for tasting, some of the seedling pears, grown on his farm, bearing his name. The members were pleased with them, they were pleasant, juicy, and of a high musky flavor.

The question for next meeting—fuel, both wood and coal, and the frauds in the measurement of them.

The club then adjourned to Tuesday, January 3d, 1854.

H. Meigs, *Secretary.*

January 3*d*, 1854.

Present—Messrs. Wellington, Church, Pell, Antisell, Sanderson, Chandler, Leonard, Chambers, Bacon, Doggett, Fowler—25 members in all.

Dr. Wellington, in the chair. Henry Meigs, Secretary.

Notice was given to the club, that Mr. Glover will have more than 2,000 specimens of his fine artificial fruits, &c., on public exhibition, free, at the Repository of the Institute, 351 Broadway,

on the second Thursday, Friday and Saturday of this month, after that they will be removed to the city of Washington. These admirable models are *unique*. They are so composed as to have the same weight as the originals: they are of the exact figures and colors.

The chairman called up the subject of the day, viz:—Fuel, and the most advantageous methods of using it for health and comfort.

Vice-President R. L. Pell, said, that ventilation is the art of conveying fresh air through confined apartments, in such a manner that the atmosphere may be kept in a pure state.

There are two ingredients in atmospheric air, viz: azote, and oxygen, which are blended together in the proportion of one oxygen, and four azote. The moment you alter these proportions, the air is rendered unfit for respiration, and if the oxygen is withdrawn, it will not support combustion, or animal life. Whenever we breathe, a portion of the oxygen from the air is taken into the lungs, and changed into carbonic acid, a substance which acts as a poison. Therefore it is, that when several persons breathe in a small, confined, badly ventilated room a sufficient length of time to consume the oxygen, disagreeable effects are observed. The air is colourless, tasteless, transparent and inodorous, and is 816 times lighter than its bulk of water. It is true that in certain situations substances do exist in air, for example, over sulphurous springs, sulphuretted hydrogen gas; over marshy ground, miasmas; over the sea, muriatic acid. Dr. Henry estimates that one adult makes 20 inspirations in a minute, and at each inspiration draws into the lungs 20 cubic inches of air, thus consuming in an hour five cubic feet, so that 100 persons confined in a close room, 20 feet square, containing over 23,000 cubic feet, would render the air of it so poisonous in four hours that it would become injurious to them. Air should not be permitted to change its natural proportions, numerous experiments have been tried by chemical analysis in various parts of the world, all of which tend to prove that the proportions of oxygen and azote are nearly the same everywhere. Fire has been supposed to be a purifier,

and this is the reason why it is always made use of for that purpose. So far from being a purifier, it is a destroyer: extracting the oxygen, the air left is vitiated, and unwholesome to breathe. Burning aromatic substances in bedrooms, with a view of making the air odoriferous, renders them unhealthy, as the charcoal used for the purpose destroys the oxygen, and gives off carbonic acid gas. This gas, which is produced by combustion of all kinds, would soon render the air prejudicial to health, were it not that the plants forming the vegetable creation absorb it as a food, and thus constantly improve the air. All rooms are completely full of air, and if deteriorated, it is utterly impossible to change it unless there are two openings, one for the departure of the foul air, and another for the entrance of the fresh, which is to take its place.

You all probably remember having heard of the black hole of Calcutta, a room 18 feet square, containing two windows on the same side: consequently there was no ventilation. In this room 146 Englishmen were imprisoned in the year 1756. The door was closed; in a short time the oxygen of the air was consumed, and they breathed only the carbonic acid gas, exhaled from each other's lungs; they then experienced great heat, and extreme thirst; at the end of six hours, 96 had died, and 23 only were found alive, and but few of them recovered. I imagine such accidents frequently occur, and the death of the individuals is ascribed to other causes. Crowded churches, theatres, and assemblies of various kinds, are very detrimental to health, particularly if lighted, as oxygen is as necessary to continue the flame, as to our existence. I am always afflicted with headache, after leaving a crowded, well lighted room. The lower floor of a filled theatre is far more healthy than the upper boxes, from the fact that by a wonderful provision of Providence, the poisonous air we expel from our chest, is heated to 98, the temperature of our bodies; consequently as it leaves our mouths, it immediately dilates, and before we can breathe again, has ascended above the heavier atmosphere, surrounding us. Its heat is then absorbed by the ceiling, and after a time it becomes of the same density as the air of the room; and as it descend to the lower level, is inhaled first by those above us. If proper openings were made in the ceiling of such rooms, this light gas would at once pass through

it, as it is amazingly volatile; at the same time air should be let in below, to take its place, as nature abhors a vacuum—the room must be kept full. Our houses for the poor are generally very unhealthy, from the fact, that the ceilings are generally low, ranging from 7 to 8 feet, consequently there is no chance for the foul air exhaled to rise, and the whole atmosphere of the room loses its oxygen and becomes tainted and vitiated, and is breathed over and over again by the unhappy occupant, who consequently finds an early grave. Pure oxygen is necessary during every moment of our existence. When the blood passes from the heart to the different arteries, it is red; but, in its passage through the veins, becomes dark; on its return to the heart, it comes in contact with the oxygen inhaled, and turns red and healthy. This plainly shows how excessively unhealthy a low confined room, where the occupant breathes foul air constantly, must necessarily be. An experiment can be easily tried, that will convince any person of the truth of these remarks; thus place a small animal in a tight glass globe, and for some minutes you will observe that he breathes freely, from the fact that the oxygen still exists, directly by breathing the same nitrogenous air continuously, he begins to suffer, and finally dies of suffocation. In dwelling houses, it is indispensable that the basement story should be well ventilated, as the air from that portion of the house is sure to ascend to all parts of the dwelling; if there is any unwhosome effluvia there, it is immediately perceived in the upper stories. People usually take very great pains to ventilate the upper parts of their habitations, and neglect the part that gives rise to all the annoyance. I have generally observed, that very little attention is given to ventilation in the bedrooms, even in our most magnificent and best built private residences. On the contrary, the only desire appears to be, to make them close and exclude the outer air; this is done by double sashes, low ceilings, and small rooms, curtained beds, gas lights and large fires.

I would recommend that sleeping apartments should at all events have high ceilings, with one or two ventilators in the corner or centre of the ceiling, French windows opening like a door, one pane at the top so constructed that it may be opened, and the

aperture covered with the finest wire gauze, and always to be left open at night, this together with the ventilators in the cornice would keep the upper portion of the room pure, without creating a draft below sufficient to injure the sleeper, curtains to be dispensed with at night, and open fire-places or grates, to be used in preference to stoves, as stoves cannot possibly change the air of a room. If it is necessary to use them, by lowering the sash of the window, and opening the door of the room for two minutes at a time, the air will be completely changed, without much decreasing the temperature of the room which would be kept up by the heat of the walls. Air is a substance and invisible, only because it is transparent, but it can always be felt by moving the hand or a stick rapidly through it. There are various modes made use of to warm dwellings and public buildings; for example, by flues built in the walls or under the floors, by open fire-places or grates, by earthen, brick or iron stoves, by steam pipes, and pipes filled with hot water; but too little attention is given to ventilation.

The heating powers of various kinds of fuel used for warming dwellings, has been discovered in the following manner, by ascertaining how many pounds of ice one pound of the following substance would melt.

1 lb. of	Sulphur melts	85	lbs. of ice.
do	Tallow,	105	do
do	Carburetted hydrogen	85	do
do	Olive oil	120	do
do	Wax	110	do
do	Peat	19	do
do	Hydrogen gas	370	do
do	Coal	90	do
do	Wood	32	do
do	Coke	84	do
do	Wood charcoal	95	do

Unseasoned wood contains one third of its weight of water, consequently a large portion of the heat made by it is employed in converting that quantity of water into steam, which as it rises,

carries the heat up the chimney, consequently well seasoned wood is far preferable. One pound of dry wood will heat 35 pounds of water, from 32° to 212°; when a pound of green wood will only heat 25 pounds to the like temperature. One pound of dry charcoal will raise 73 pounds of water from the freezing to the boiling state.

Mr. Sanderson remarked that the evils resulting from want of ventilation were not generally known. He said that a singular fact occurred at the Zoological Gardens in London, that was the effect of bad ventilation of the place where monkeys were kept. Fifty out of the sixty died of tubercular consumption, before the cause was found out; and recently in this city several men, prisoners, died in a cell from want of pure air. I have devoted much attention to the subject of ventilation of dwellings and public buildings. [He here showed a plan and drawing of a heating and ventilating apparatus which he has invented and successfully applied.]

Analysis of Mr. Bull.

hellbark Hickory,............	1 cord will burn for	100	days.
White Ash.....................	do	77	do
White Beach,.................	do	65	do
Black Birch,.................	do	63	do
White Birch,.................	do	48	do
Butternut,...................	do	51	do
Red Cedar,...................	do	56	do
American Chestnut,...........	do	62	do
Wild Cherry,.................	do	55	do
Dog Wood,....................	do	75	do
White Elm,...................	do	58	do
Sour Gum, ...	do	67	do
Sweet Gum,...................	do	57	do
Pignut Hickory,..............	do	95	do
Red Heart Hickory,...........	do	81	do
Witch Hazel,.................	do	72	do
American Holly,..............	do	57	do
American Hornbeam,...........	do	55	do
Mountain Laurel,.............	do	66	do

Hard Maple,	1 cord will burn for	60	days.
Soft Maple,	do	54	do
Large Magnolia,	do	56	do
Chestnut White Oak,	do	86	do
White Oak,	do	81	do
Shellbark White Oak,	do	74	do
Barren Schrub Oak,	do	73	do
Rock Chestnut Oak,	do	64	do
Pin Oak,	do	71	do
Scrub Oak,	do	71	do
Red Oak,	do	69	do
Barren Oak,	do	66	do
Yellow Oak,	do	60	do
Spanish Oak,	do	52	do
Persimmon,	do	69	do
Yellow Pine, soft,	do	54	do
Jersey Pine,	do	48	do
Pitch Pine,	do	43	do
White Pine,	do	42	do
Yellow Poplar,	do	52	do
Lombardy Poplar,	do	40	do
Sassafras,	do	59	do
Wild Servin,	do	84	do
Sycamore,	do	52	do
Black Walnut,	do	65	do
Swamp Whortleberry,	do	73	do
Lehigh coal,	1 ton will burn for	99	do
Lackawana coal	do	99	do
Rhode Island coal,	do	71	do
Schuylkill coal,	do	103	do
Susquehannah coal,	do	99	do
Swatura coal,	do	85	do
Worcester coal,	do	59	do
Canal coal,	100 bush. will burn for	230	do
Liverpool coal,	do	215	do
New-castle coal,	do	108	do
Scotch coal,	do	161	do
Kurthouse coal,	do	203	do

Richmond Coal,............	100 bush. will burn for	205	days.
Stony Creek,................	do	243	do
Hickory charcoal, ...	do	166	do
Maple do	do	114	do
Oak do	do	166	do
Pine do	do	75	do
Coke do	do	162	do

Of the Woods it should be remarked, they were all dried in a ies 38 degrees above that of boiling water, before being burnt.

To this statement we might add the experiments of Professor Johnson, on the coals of the United States; but as they refer only to the specific gravity and the power of raising steam, it is not to the purpose to give the results in detail. The facts that they cost the government some $50,000—that the steamships, predicated and built upon this principle, have failed; that coal, in the cities at least, has superceded wood, and that our comfort is dependent upon the supply, we may with safety direct our attention to a more economical plan for using it. At present, one-third, if not one-half the heat contained in wood or coal, is wasted in the construction of our chimneys; and, if we examine our system o heating and ventilation, we will discover, besides the waste, that our houses are but hot-houses for generating and propagating the various diseases to which the human body is subject. The air in a material state is composed of 20 parts oxygen, 78 nitrogen, 1 carbonic acid, with some atoms of hydrogen, and if examined in our houses, particularly those containing the "modern improvements," il will be found, besides a plentiful supply of carbonic acid gas from the lungs—a sulphuric compound, with a modicum of arsenic, exhaled from the cast-iron heaters, and a vapor arising from the croton, is added to the mass, and of course enters the lungs to the injury of the persons inhaling it. "The action of gases inhaled upon the blood circulating through the lungs," says Dr. Griscom, "is direct, immediate, and positive. If an innocuous gas is taken in with the air, the lungs have no power of separating them; nor if it be poisonous gas, is there any power to deprive it of its injurious properties." Hence our public buildings, places of amusement, and even our churches, are, to the chronic

or pulmonary patient, to be avoided, and considered as the prominent sources of their affliction.

At present, if we take any of the churches in the city—say one calculated to hold 1,000 persons –and make the calculation, we will discover that there is not a single one in which the congregation could be shut up for twelve hours. In one (say 60 by 85 feet, and 34 feet high,) we have an area of 163,200 cubic feet; and if we estimate that each individual would vitiate at each respiration 30 cubic inches, we would have from the 1,000 persons during the two hours occupied in the service, 450,000 cubic feet of air that cannot be breathed by any individual with impunity. But as this is only the carbonic acid gas thrown off the lungs, constituting about one-fifth of the whole amount, we must add the exhalations from the body, with the sulphuric, the arsenic, and the vapor arising from evaporated croton, &c., &c., to the above result.

Thus, without entering into a minute analysis of the air, or of the objects from which caloric is obtained, would it not facilitate the object of the meeting, or be more in conformity with what we believe the progressive genius of the age, to institute an inquiry into the mode of ventilating and heating our houses? From the facts already hinted at, it is very certain our present system is seriously defective—and, from the spirit existing in the community, it is likely to remain so. Our houses, our workshops, and our places of business are alike defective; and perhaps no portion of the community suffers more from this neglect than the farmer. His occupation and general habits are all conducive to health; but his nights are too often passed in an area too small to supply him with the air that is necessary to sustain him. The house of a countryman is proverbially small, the chambers low ceiled, and ventilation never thought of. *Thus the happy effects of his position by day are in a great measure counteracted by that of the night, and the seeds of disease sown during the hours of sleep, that cannot be eradicated by the healthy occupation of the day.*

Prof. O. S. Fowler observed that he was attracted here to day by this deeply interesting subject, to listen and not to speak, but

he would say that it may be looked at from different points of view; it was an old question, yet unsolved! I assume a stand point not yet much occupied. I view it in its bearings on mind as well as matter—the spirit principle of man, his moral existence. The condition of his body acts directly upon his spirit as well as his body. Impure air almost always makes him combative and vicious, while pure air almost makes him virtuous.

Mr. Pell remarked that the necessity of proper ventilation to animals was not generally known. They are very often kept in close, confined, cold places with hardly room enough to let the carbonic acid gas escape. Some years ago it was discovered in England that sheepfolds had been so improperly constructed that many sheep were destroyed. They then ventilated the places and found the cure. In France, recently, cattle died in great numbers of pneumonia, in confined places. They found the remedy by turning them into the open air—and by vaccinating those which were well, with matter from the diseased—those vaccinated had the pneumonia slightly.

Fuel—Ventilation. By H. Meigs.

Thomas Tredgold, of England, a civil engineer published an interesting volume on fuel and ventilation with an appendix by F. Bramah, civil engineer, London, 1836.

We find the following information in it, condensing the matter as much as we could do and leave the true points clearly intelligible. After very learned and important remarks on the good and evil to man of pure and of impure air—in our dwellings and places of business—this work begins with the consideration of the best kinds of fuel and how to use it.

Whatever sort of fuel is used it is of great importance that it should be as dry as possible. Coke is highly recommended. The experiments on coals generally are shown by Mr. Sanderson. There is an inference as to the best—worth all attention in domiciliary warming. This subject has occupied the study of many eminent men—Franklin, Rumford, Thompson, Hassenfratz, Fossombroni, Dalton, Lavoisier, Blavie, Miche, McCullock, Kirwan, Buchanan, Sylvester, Reed, and at home some of our worthiest

and wisest citizens—among whom Dr. Griscom and the President of the Medical Society, Dr. Stevens.

The relative values of wood as fuel have been very accurately determined in this day. How much of the fuel, in weight, is required to convert a cubic foot of water (60 pounds weight) into steam, as follows :—

	lbs.	oz.
Newcastle coal,	8	4
Cherry do	11	2
Cumb'ld do	22	
Dry Pine wood	19	15
Dry Beach do	27	–
Dry Oak do	30	–
Good Peat	53	6
Coke	7	7
Charred Peat	23	–

In a room warmed by heated air, a person not actually employed is not comfortable when the heat is below 62° Fahrenheit except in cold weather. But when the air out of doors is 20°, the room feels hot.

Warming rooms by steam was first suggested by Col. William Cook, in 1745. M'Knight proposed the use of hot water and steam combined. Strutt's Cockle, 1742, warmed the Derbyshire Infirmary. It was an elegant application of principles to attain the whole effect of fuel—but it was cumbrous. The principle of not suffering the air to come into contact with anything heated above 212°, (the point of boiling water,) excludes an immense mass of stoves, &c. Guyton Morveau examined the Swedish stoves of glazed tiles with a view to introduce them into France. But he added the iron plates which burned the air. Dr. Brande thinks steam heat wholesome and economical. Dr. Ure says the people who worked in steam drying rooms were healthy—and those in stove drying rooms sickly. And plants love the steam heat—it affords them dew like the natural dew, and is equally good for them. Dr. Wells speaks of this in his work on dew. O'Neil on stoves and forcing houses, says it is most important to plants. The heat from steam is regular and congenial to all

plants and more pleasant and salubrious to the human lungs than any other artificial heat whatever. As to the economy, Atkinson's experiments determined that there was not much difference detween it and other usual methods Count Rumford found that dry pine wood weighs about 34 pounds per cubic foot, and that $19\frac{1}{4}$ pounds of it would make steam of a cubic foot of water, which weighs 60 pounds.

It is said that one square foot of the surface of a steam pipe heats 200 feet of air.

There is no use of proving the indispensable necessity of pure air to human health.

The quantity of air rendered unfit for breathing by one person in a minute is well ascertained to be 800 cubic inches. Our all wise and beneficent Creator has so ordained it that the breathing of the same air does not take place in proper ventilated places—the constituents either rise or fall below the mouth. But in confined rooms this cannot be. Ventilation should be in the upper part of a room, so as to carry off the noxous gases. Candles, lamps, &c., deteriorate the air in rooms.

In a room containing 200 people there must be 800 cubic feet of air changed in one minute, or as much as would fill a room 9 feet square and 9 feet high. The plan of the Romans for regulating the temperature of the Laconicum or sweating room was a good one—a valve at the top which was opened or closed by a convenient arrangement below, as much as seemed necessary. The external air should be admitted at or near the floors. The quality of the air in a room is not much improved by letting it escape much below the ceiling. The glass of your windows cools the air in the following ratio: Multiply the area of the glass by 1.5 and the product will be the cubic feet of air per minute which will be cooled from the temperature of the room to that of the external air.

In public buildings, dwellings, &c., the quantity of air, in cubic feet, to be warmed in one minute should be equivalent to four times the number of people in it, added to eleven times the number of external windows and doors—added to $1\frac{1}{2}$ times the area

in feet exposed to the glass of the external air, the sum will be the quantity in cubic feet. In hospitals more care must be had to introduce pure air, say six cubic feet per minute for each person. Free ventilation is more necessary in summer than in winter. In summer the fresh air should enter from shady side of the house. Cold air should be admitted through wire gauze or other small spaces, so that the air may have no perceptible current. Currents of air should be carefully avoided by persons of a delicate constitution. Coarse gauzes may be usefully employed to let air pass into a house without forming a sensible current of air.

On this subject of ventilation we find much knowledge in the works of Arnott, Drs. Reid, and Peclet, and Dr. Henry.

Mr. Sanderson said that the late work of Mr. Chambers on this subject was very worthy of attention.

Dr. Church observed that the tests which have been applied to fuel are somewhat fallacious—one pound of pine wood produces more heat than a pound of coke. I may possibly stand alone in saying that wood for fuel may be too dry! Wood should be seasoned about one inch on the outside, then the water in the heart of the stick becomes decomposed by the flame on the outside, and then gives a more intense heat.

Mr. Sanderson.—Fires burn brighter in damp, than in dry weather. When we use water in vessels in our rooms, properly, the evaporation is very useful. Ventilation is necessary, no matter what fuel is used for warmth. We have all felt the want of it in crowded buildings, churches, &c. The impurity of the air in churches makes congregations sometimes drowsy. The clergymen are often injured by the impure air of their crowded churches.

Prof. Fowler.—I came here to hear—and what I have already heard, makes me say, that we ought to have pure air at any cost. Poor air is good for nothing, either for breathing or for the greater object, thinking of the true kind, to be done, as seaman say,—at *ten knots instead of two.* And I recommend—from anatomical knowledge—that men breathe deeper and longer than they com-

monly do. Very many persons do not breathe as long and deep as they ought.

Our diaphragm [the diaphragm muscles are the tendinous partition between the chest or Thorax and the abdomen.—*Meigs.*] ought to be extended in breathing, more than the intercostal muscles, (the muscles between the ribs). Let us learn to breathe long and deep, of the purest air our knowledge can give us. Alas! our ladies are so bound by the cestus at that very point of the diaphragm, that they hardly breathe at all. I wish them to know, that long life, beauty, health and joy, with a thin blood rather than a thick one, may be had by obeying the voice of wisdom in the matter of breathing, as well as in the other offices of human life.

Chairman.—We should endeavor to learn how to gain the proper warmth at the cheapest rates. As to ventilation of stables, those of Massachusetts generally were perfectly well ventilated.

Mr. Sanderson.—None are more so than the barns of Pennsylvania, generally.

Chairman.—As to what was said by Mr. Pell, on the inoculation for pneumonia in cattle, it is true that inoculatlon and vaccination produce much milder disease than the natural. Congregations are sometimes drowsy in the heat of summer, with all the windows wide open.

Dr. Antisell was requested to give his opinion, and said, that he was at issue with much that had been said on the subject.

The most porous wood gives out heat quickest, the hard woods burn longer. My friend on the right is correct; the moisture in the body of wood, keeps up the heat longer—dry wood loses twenty per cent. of its weight, in the process of drying. The experiments on fuel, made by the British Admiralty, have proved, that coal is preferable to all the compounds presented—of tar, pitch, &c., in cokes which are intense heaters, are not economical. When an intense heat is required, the drier the fuel is, the better. Wood is best felled in winter. As to ventilation of buildings, we

know, that warm air ascends, and when we let it escape at the top, cold air comes in below to supply its place. The openings for the exit of the air, should be four times as large as the inlet of fresh air—the air in the room being expanded by the heat of it—the carbonic acid gas, with the heated air, ascends to the ceiling. Moisture is indispensable in the air we are to breathe. Cold air may be admitted through meshes of net work, 400 to the square inch; or plates perforated that number of times, the air then enters the room sufficiently for ventilation, and without any sensible current.

Chairman.—Rightly considered, we require as much moisture in the air from dwellings and other rooms, as we do in the open air, and we should contrive to produce, if possible, as good air *in* as *out* of doors.

Dr. Antisell observed, that, for many purposes, condensed fuel is economical.

Dr. Church moved, that this subject be continued at the next meeting.— Carried.

The Secretary quoted, partly, from the *London Quarterly Review*, for October, 1853:

NATIONAL INSTITUTE OF FRANCE.

The National Convention destroyed the old Academies, in 1793, and in 1795 established the Institute; divided it into three classes: 1st, the physical and mathematical sciences; 2nd, the moral and political; 3rd, literature and the fine arts. These three classes were subdivided into twenty-four sections. Each section has twelve members, six of whom reside in Paris and six in the provinces These sections have special sessions for their particular business. The whole body of the Institute meets once a month. Members are elected by the whole body.

The Convention intended, that the Institute should be a government machine. — "l'Institut Nationale des Sciences et Arts, est destiné a suivre conformement aux lois et arrêtes du Directoire Executif, les travaux scientifique et litteraire, qui auront pour objet, l'utilité generale, et la gloire de la Republique."

About that time Robespierre used to walk through the Tuilleries (which were planted with potatoes), splendidly dressed, and always with a large bouquet of flowers in his hand. The then French calender was thus: One day, ten hours; each hour ten minutes. Each of the 360 days bears a name of some vegetable or beast, or something else, as, for instance, carrot day, cabbage day, ass day, hog day, &c., except the last five, which were called *sansculottides* (no breeches day). Christmas was called by those blasphemous villains, the day of the dog.

On public occasions, leading men mixed up in their speeches, low, vulgar, blackguard ideas, with pretention to classic learning.

The Institute had 144 members, of which the Directory chose 48, and the remaining 94 were chosen by the 48.

For some time the celebrated La Place, the glory of astronomers, was obliged to stand on the Pont Neuf, on clear evenings, to show the moon to passers by for a few sous. At evening parties he had a box of spiders and caterpillars, which he was in the habit of eating occasionally, as so many sweetmeats as he talked.

At one period he lived in a peasant's house in the country, and paid his board with a gold medal, given to him by a foreign learned society. He could not, for a long time, afford to buy a broom. The great botanist, Adanson, had not money enough to buy shoes.

After remodelling the Institute, it is now composed of five academies: the French academy, the academy of inscription and belles lettres, the academy of Science, academy of fine arts, and the academy of moral and political sciences. Each of these academies has its bureau, consisting of president and directors, elected by members, for a fixed period, and one or more perpetual secretaries for life. The salaries of the secretaries are $1200, a year. Each member receives $200 salary.

But the entire Institute is not without its dangers; government has fostered it.

The perpetual secretary of the academie Francais is Mons. Villemain, who fills that distinguished office well. The academy of

science has two perpetual secretaries, Arago was one of them since 1830 in the mathematical branch, and Flourens for the physical sciences. Every Monday the academy opens its doors at 3 o'clock p. m., in presence of crowded assemblies. The desk of the two perpetual secretaries—at which the president and vice-president are also seated is literally piled with letters, memoirs, works and documents of every description—the larger part from persons utterly unknown relative to inventions and adaptation of science to arts and manufactures. The minutes of the previous meeting are first read. The academy often resolves itself into secret committee. The academicians meet together to hear their secretaries read the works of the audience. The parts are changed; nor is this all, for the audience assumes the privilege of blame or applause, while the poor academicians listen in silence. It daily becomes more difficult to obtain a hearing for a purely theoretical paper, or on the higher branches of science; not even Lord Broham could get a chance to read his beautiful experiments upon Light! The endless correspondence must be first gone through.

A bad effect arises from the admission of the public. It causes virulence in debate, animated by rivalry. Men who could argue coolly enough in private committee, contend for victory before the crowd!

Arago, who was director of the Observatory at Paris, was also a member of the Deputies and exerted all his inflaence to procure large grants of aid for his branch, astronomy. Yet nothing is more obvious than that astronomy is on the decline in France.

Much amusement has occasionally been produced by chance persons discovering luminaries in the heavens, while the Argus of the Paris Observatory was asleep! The idle promenaders on the *Boulevards des Italiens* detected one evening a magnificent comet which was not seen by Astronomer Arago and his assistants until the following night.

The club adjourned to Tuesday, January 17th, at noon.

H. Meigs, *Secretary.*

January 17, 1854.

Present—Dr. Enderlin, Dr. Antisell, Dr. Wellington; Messrs. Chandler, Chambers, Lawton, Pike, Senior; Rev. Joseph Carter, Hon. R. S. Livingston; Messrs. Bullock, R. L. Pell, Toucy, Pardee, and others—thirty members in all.

R. L. Pell, in the Chair. Henry Meigs, Secretary.

More than two thousand of the unique and admirable specimens of model fruits and vegetables by Townend Glover of Fishkill, were on the tables in the room. By request, Mr. Glover gave some account of them. He said that the object of this collection of models of the fruits of the United States is to exhibit to the agriculturist at one view correct specimens of the various fruits cultivated in North America, with labels attached to each, describing the taste of the flesh, habit of the tree, time of ripening, soil or climate best adapted to any particular species, and the stamps of approbation or rejection of such horticultural societies as have tested the variety in their own vicinity, thus enabling the farmer to select for his orchard only such trees as are best adapted to his soil, climate, State where he resides—by so doing saving the great loss of time, money, labor, and the severe disappointment consequent upon having planted trees unsuited to his locality or soil, compelling him either to regraft them, or cut them down as utterly useless, after the lapse of several years. And, also, to enable the horticulturist to compare all the varieties at any time, when the real fruit is in season, or out of season. And the public can learn in this collection the various synonyms, or different names by which the same fruit is known in different places—which are most perplexing to the working farmer and the horticulturist.

I hope to induce the government or some able society to purchase the entire collection—the work of six years of unremitting labor and study—and, if it should be deemed worthy of patronage, that it be placed in some public institution in Washington, where it may be of utility to the public in general. This work should also be completed by adding all the native and foreign fruits of the South and the West—also the other valuable vegeta-

ble productions, such as the sugar cane, cotton plant, &c., and the insects, in all their transformations, destructive of the crops, and the best means of preventing their attacks, and of destroying them: all of which will enable the farmer to know at a glance the fruit he wants on his place, best suited to it, and the enemies of his crops, in whatever stage he sees them.

If the value of the orchard produce for the State of New-York alone is taken into consideration—which by the census of 1850 was $1,761,950—the value of such a collection accessible to the public will be immediately perceived.

The Secretary read the following note from one of the most respectable farmers of Long Island, relative to a great abuse of the farming interest in the manures derived from this city:

Bushwick, L. I. Jan. 17, 1854.

" In behalf of many farmers who have been sufferers by short measure of manure sold in New-York—they suppose it is not known to many of the citizens that the farmers receive from nine to ten bushels a load, instead of the legal amount, which is fourteen bushels. The evil has existed for a number of years, and is increasing. If you think proper to introduce this matter to the Farmer's Club any plan they may devise will be thankfully received by the farmers.

NICHOLAS WYCKOFF."

After discussion, on motion

The subject of the letter was referred to a committee, to report what measures are proper for the Club to remedy so serious a public evil.

The Chairman appointed Dr. Antisell, Meigs and Livingston.

Mr. Frederick Armstrong moved that a committee be appointed to examine Whitmarsh's Patent Heater—now in operation in the extensive store of James & Beebe, 356 Broadway, 175 feet long. Carried.

Mr. Meigs, while the committee was out read the following:

SALT.—COLLATED BY H. MEIGS.

The history of this most precious condiment is interesting. The latest and best account, [by B. Ballaert, F. R. G. S.] was read before the London Society of Arts, in August, 1853.

ASIA.

Turkey, in Asia. — Rock salt is abundant in Anatolia, solid and in springs and lakes yielding salt; also in Rasonania where it is used as a building material. At Kiz large quantities of nitre are extracted from the soil. At four days journey from Aleppo there is a valley of salt, in winter it is a saline lake, in summer half an inch of salt. Lake Turial, in Karawania is so salt and bitter that no fish can live in it. Capt. Lynch of the U. S. N., examined the Dead sea and found it 45 miles long and 10 wide—of a nauseous compound of bitter salts, greasy on account of the bitterness in it. The bottom is of blue mud sand and cubic crystals of salt. Analysed by Messrs. Booth and Muckle. A thousand parts contain,

Chloride of Magnesia	145.8971
do Calcium,	31.0746
do Sodium,	78.5537
do Potassium,	6.5860
Bromide of do	1.3741
Sulphate of lime,	0.7012
	264.1867
Water [or nearly one quarter is composed of salts.]	735.8133
	1000.0000

Arabia.—Salt is so plentiful, that in many places the buildings are constructed of it.

Persia has salt, probably, more abundant than any other country in the world—the barren island of Ormuz is almost wholly composed of salts. The salt lake Oromiah is 300 miles in circumference. One quarter part is salts, like the Dead Sea.

Cabul.—Here is the salt range. In 1822, eighty millions were sold at about $1.00 the hundred weight. Rock salt, at Kotree, in

Scinde, can be delivered near Bombay for $1.25, per ton. North-east of Kotree, the salt lake Samber supplies much of Upper Hindostan with salt.

Hindostan.—The Runn is an extensive salt morass, communicating with the Gulf of Cutch. It is covered for miles with salt crust.

Assam has rich rock salt in the district Dolpos.

Nepaul has salt and nitre.

Bahar has nitre in its soil.

Hebipore has carbonate in abundance, and on the edge of the plains washed by the Ganges.

Cashmere has salt lakes, 9,000 feet above the sea.

Ceylon has dolomite, and in that rock saltpetre caves occur.

Birmah has salt, nitre and natron.

Java has volcanoes which throw out salt mud.

Australasia and *Sumatra* have saltpetre caves.

Luzon has rock salt.

Southern Australia has salt lakes.

Ohau, one of the Sandwich Islands, has a salt lake.

The *Gallapagos Islands* have strong salt lakes at the bottom of craters or volcanoes.

Tartary.—Extensive plains here yield salt and nitre. The Dobsoon Noor, or salt lake, celebrated all over the west of Mongolia, furnishes salt for the Tartars and the Chinese.

Thibet.—Kou-kou-noor, the Blue Lake, is four hundred miles in circumference. It is bitter and salt, frozen over in very cold weather. In the arid country of the Tsaidam Mongols, salt and borax abound. A lake from which the borax is obtained, is 15

days journey from Teshoo-Lomboo. It receives no streams of water. The borax is found in this lake crystallized, and is abundant. Rock salt is found in Thibet.

China, on the borders of Thibet, has salt wells, with an inflammable gas to boil down the water and make the salt. This well-water contains a quarter of salt.

AFRICA.

Morocco has mines of rock salt. Algiers has, near Lake Marie, a mountain of salt. Lake Argen, in Orom, is salt.

Tunis.—West of the Gulf of Khabs is a large salt lake; in the north-east is a mountain where salt is found—Mount Hadjpah. Nitre is in some of the soils.

Tripoli has salt lagoons and carbonate of soda.

Egypt has salt in the Lybian deserts. Bilma is famed for its salt beds and lakes.

Tindini and *Wadami*, on the road from Triot to Timbuctoo, have extensive salt beds. Natron plenty.

Sahara.—Salt plenty.

Abyssinia has plains containing enormous quantities of salt, particularly at Assa Durwa. There is a great Tigre, where the salt is from two to three feet thick. Lake Assal furnishes much salt; it is 570 feet below the Red Sea, and is surrounded by a volcanic country.

Mozambique has nitre.

EUROPE.

Iceland.—The celebrated fountains, the Geysers, contain 14 to 17 per cent of salt.

AMERICA.

British America.—Lower Canada has salt lakes and springs.

United States.—Rock salt is found in Virginia. First, there are fifty feet of soil and rocks, then gypsum 160 feet thick, also springs having nearly half salt—43 per cent. From the Atlantic to the Pacific there are plenty of salt springs, lakes, &c. Fremont and others have made many discoveries of salt.

The Wha Satch Mountains are supposed to contain immense quantities of rock salt. The Mormon Lake is almost a saturated

solution of chloride of sodium,	....	97 80
do calcium,	....	0 61
do magnesium,	....	0 24
Sulphate of soda,	....	0 23
do lime,	....	1 12
Total,	....	100 00

In summer this lake throws down salt; in winter sulphate of soda.

Texas.—The western branch of the river Brazos rises in a very large saline plain, formed by salt springs; also a salt lake in North latit. 27°, West long. from London 98°. Mexico in the North has large salt plains. One of the lakes on which the city of Mexico is built, is salt.

Central America.—Guatemala salt. In Nicaragua a salt lake, (Laguna de Salines). At Istatitlan (land of salt) there are salt springs.

Hayti.—Rock salt is said to be here. Zipaquira and Chita, in New Granada, have rock salt.

Brazil has large plains in Matto Grosso of salt and salt springs.

Patagonia.—300 miles up the river Plate [Rio de la Plata] [silver river] is the Rio Negro [Black River], up which is a salt lake, shallow in winter, but a new field of salt in summer—also lakes with floors of salt from two or three feet thick, even in winter, under water, very pure salt, contains only 0.26 of gypsum, and 0.22 of earthy matter.

The borders of these lakes are of mud in which crystals of gypsum are imbedded. On the surface of some of these lakes sulphate of soda lies scattered around. Near Bahia, Blanca, (White Bay,) the surface of the ground is incrusted with salt. The salt lakes and plains of the Pampas appear to be formed and still forming by means of the salt streams from the Andes mountains. The great salt lake, Urre, in South lat. 37° lon. 66° west from

London, has many salt streams running into it from the Andes. In the province of Tarija on the Salinas of Casabindo, 45 leagues East of Atacamo, the salt is hard and dry. At San Luis is the great salt lake Benidero. The almost treeless pampas reach from lat. 22° South to the Southern limits of the continent, and much of its surface indicates the presence of salt in it. The wells of Buenos Ayres are brackish. Near Tucuman, there is a salt desert 200 miles long. Large quantities of salt are about Potosi. Towards Oruro the country with salt incrustations—a compound of salt, gypsum, carbonate and nitrate of soda. Descending towards Lima, the valleys near Chili are incrusted with salt. Now here is a long section, viz. from the Atlantic, across the pampas, which are something like 1,500 miles long by 500 wide, over the Andes to the Pacific, through arid countries, and salt found every where upon the surface. The same disposition of salt appears to occur, with but little varieties, all over the globe—more where rains are less.

Chili has rock salt in her mountain Rancangua. Rock salt and salt lakes are found in several places in the Cordilleras. One salt lake is at Copiapo, 10,000 feet above the sea. North of Copiapo is the desert of Atacama in which is abundant salt—a mountain district called the salt range—numerous salt lakes and deposit mines of rock salt are at Tocallo. There are many lakes in the Andes, some salt and some fresh.

Peru—Fluarmy, in lat. 10° south—the earth is washed with nitrate of potash—salt stratum at Pisco, lat. 14° south, a large salt plain, [pampa de sal] on the Andes, 15,000 feet above the sea. The plain of Tamarugal, so called from the species of mimosa growing there wherever a little water comes through ravines to the plain, and in these ravines dead wood, sometimes called hossil, is buried under the soil. The surface of the plain is strewed with pebbles and sand, then follow salt, nitrate of soda, borate of lime, glenherite, pickeringite and other saline bodies. The old Spaniards worked the nitrate of soda to some extent. In 1830 it was made for Europe, and since 1830 to March, 1853, 5,350,000 tons have been sent from the town of Iyenque, worth 25 million of dollars.

This interesting history of salt deposits may be greatly enlarged.

The Chairman called up the subject of the day—

THE VENTILATION AND WARMING OF BUILDINGS.

Mr. Lawton mentioned the mode of steam warming practiced now in some of our steamboats, and a delightful kind of warmth, and healthy as it is agreeable.

Mr. Fred. Armstrong described the Whitmarsh patent, now in operation at Janes & Beebe's store, 356 Broadway. In the cellar of the building, a solid mass of brick work contains a terra cotta (earthware) furnace of small dimensions, supplied with fire of coal. The heat is applied to a radiator of a figure extremely like the deep cogs of a wheel, thus greatly enlarging the surface of radiation. The furnace is surrounded by a bath which is wetted by pure water, so that the heat ascends into the store along with evaporated water, so as to supply warm air as much as possible like the common air; and the expense of fuel is stated to be about one-fifth of the quantity required to produce the same temperature in common stoves. This patent avoids scorching the air and carbonizing the floating atoms of matter in the air, suppose to be far more injurious to health than when not carbonized.—The whole heater cost about $200, and is not in the least liable to get out of order, and any one can manage it, and not the slightest hazard of fire. Any fuel may be used in it.

Dr. Antisell was requested to speak as to the difficulties which have been experienced in vain efforts to properly warm and ventilate the Parliament house of England. He explained the difficulty as being the large amount of external air required to supply the demand even in those large apartments, because the number of persons assembled there was so great. The consequence was too strong a current of air, which was unavoidable in such crowded places. London *Punch* merrily, but very truly shows that the mode "cools the legs of Parliament, while their heads are heated." There are difficulties to be overcome. Radiating heat from open fires, dries the air too much—stoves scorch it. Any process by

which radiating heat can be managed in proper combination with vapor of pure water, is very desirable. Often the heat of rooms is accompanied with vitiated air, and becomes disagreeable to the smell as well as hurtful.

Pure air and moisture should, if possible, be supplied for us with the right temperature. Steamboats, Appleton's new book establishment and others are well warmed by pipes containing hot water or steam. Blind chimnies may be well employed to let out vitiated air from dwellings.

Mr. Armstrong said that openings along side and at the top of fire places and mantles, are very useful as escapes for bad air.

Mr. Meigs remembered something of the *Franklin* more than half a century ago. It was a wide open fire-place of iron, in which the fuel was so well ventilated that the iron never became hot enough to scorch the air—nor was water used on it or near it for evaporation. I believe that small openings in the adjacent chimney were made to admit pure air to supply that drawn up the chimney through the Franklin. They produced a warmth more agreeable to me than any of our stoves or chimney fire places.

Dr. Antisell—Iron is after all the cheapest for warming apparatus. Of course, care is wanted to prevent its being heated so as to scorch the air. And as to economy, the direct application, instead of using it to heat water, to heat the air, is best.

Mr. Meigs adverted to the introduction of terra cotta stoves into France from Holland, which was deemed of great importance to health and comfort by the philosophers of 60 years ago. But one of them, the distinguished chemist Guyton Morveau, strangely recommended to add iron to them, thus renewing the evils of burnt air. Our stove pipes are even worse than the stoves. Being of thin sheet iron they are often heated red hot, and generally in part, hot enough to scorch the air. The Franklin stove being placed close to the chimney, required hardly more than a foot or

two of pipe, and I never saw that little piece red in mine which kept me warm for a great many years.

Mr. Lawton—It is true that for want of proper construction, we have been exposed to the bad effects of bad air, worse than scorched air. I bring pure air into my room by wooden tubes.

Mr. R. L. Pell—At the last meeting of the Club, I called your attention to ventilation as respects houses, &c. I will now speak of it agriculturally. You are all aware of the importance of oxygen in the germination of seed and growth of plants, and that it is necessary it should gain access to all parts of the soil, and to the roots of plants. The farmer facilitates the process by subsoil plowing, harrowing and working it. Still some soils absorb oxygen much more rapidly, and in greater quantities than others. Clay, for example, absorbs more than sand, and peats or vegetable would far more than clay. This depends upon the porosity of different soils and their chemical constitutions. If the clay should happen to contain manganese or iron in the state of protoxides, it absorbs oxygen to combine with it, while the decaying vegetable matter takes in oxygen to aid its decomposition. Some soils likewise absorb heat much more rapidly than others, the temperature of which often amounts to from 111 to 130, while the air in the shade is at 80°; black soils are thus affected, and consequently become warm first, and promote vegetation more quickly than others. We possess the power of coloring our soils, and thus gain this advantage where it does not naturally exist, by top dressing with root charcoal, or other dark substances, and at the same time render it capable of sustaining heat by a proper admixture of sand, and yet our hopes are sometimes disappointed. I had a piece of land of a sandy nature, situated on an eminence, which, notwithstanding all my endeavors to the contrary, refused to produce anything more valuable than the detestable fire furze vine, and although there was no portion of my farm that apparently required draining less, I cut a good, substantial drain through it, in the fall, 5½ feet deep, and stoned it after the most approved manner, then ploughed the ground well, and the following spring sowed oats, the yield was 66 bushels per acre. Upon a subsequent examination I found the land contained cop-

peras which, during the rains of the fall percolated through the drain, and left the land in a proper state to produce a crop. Sprengel says, a soil "is often neither too heavy nor too light, neither too wet nor too dry, neither too cold nor too warm, neither too fine nor coarse, lies neither too high nor too low, is situate in a propitious climate, is found to consist of a well proportioned mixture of clayey and sandy particles, contains an average quantity of vegetable matter, and has the benefit of a warm aspect and favoring slope.

It has all the advantages, in short, which physical condition and climate can give it, and yet it is unproductive, because, says chemical analysis, it is destituto of several mineral constituents, which plants require for their daily food, or contains some poison that must be carried off by a drain. Now that I have shown the necessity of oxygen in a soil, I will state my experiment of ventilation, and its results. Two years since, I purchased 20 acres of low swamp land, which had been covered with water for centuries, cut a main drain through it, and lateral drains, ventilated every twenty feet, which carried off the water so perfectly, that it became the dryest part of the farm. The whole was planted with cabbages and potatoes. When they came to maturity, the cabbages growing on top of the drains, weighed forty pounds, when those immediately contiguous, in the next row, only weighed twenty. The potatoes over the drain were far larger, and twice as abundant as those in the rows next. A false dry drain was then constructed between two drains, with a view of observing, whether the water passing through had any effect upon the growth of vegetation above the drain, and it was found by fair experiment, that the result was the same above the dry ventilated drain, and the growth very superior to the adjoining rows.

Draining land aids astonishingly in ventilating it, as water immediately finds its way to the depth of the drain, forming pores through which fresh air descends, and rapidly promotes the healthy growth of plants, and renders the earth sweet, loose and friable. Air invariably diffuses itself, wherever water has been. The farmer should understand, that a deep, well ventilated soil is indispensable to the production of valuable crops, and that the

less permeabls to air his soil is, the more unwholesome it will be to the roots of his plants. The deeper the soil, the longer it may be induced to grow crops, without running the risk of exhausting it, and the greater the variety of crops that may be grown upon it. Drain your land thoroughly; then use the subsoil plough as an auxiliary to the surface plough and the drain. The surface plough turns over the soil to the depth of $9\frac{1}{2}$ inches, and the subsoil loosens it $9\frac{1}{2}$ inches deeper, enabling the water to descend readily, and carry with it the soluble substances it had met with on the surface.

The property of oxygen in its relation to vegetable and animal life, is wonderful. It exists in the atmosphere to over twenty per cent of its bulk, is void of color and smell: therefore cannot be distinguished from the air surrounding us. Every nine pounds of water contains eight pounds of oxygen. Almost half of all the solid bodies in the world consists of oxygen, half of all living animals and plants, and on its presence all animal life depends.

Mr. Lawton.—I have found the highly beneficial effect of what may be called ventilation of the soil. I have ditched and drained land, which was covered with water—I have raised beds on it, sloping at an angle of 45 degrees—well pulverized, and (as I say) well ventilated, and (as I believe) admitting electricity, and giving noble growth to vegetables. I have seen the want of circulation of air in soil which was as dry as common in arable lands. These felt the immediate benefit of ventilation, by underdrainage and deep tillage. This principle is largely practiced in England.

I am very glad to see so many of our venerable citizens attend here. We talk much of substantials, of Horticulture and Agriculture. Let us sometimes speak of those delightful embellishments, which good taste can easily give to our gardens and farms. What more deserves all the beauty and grace that the most refined art can give? I propose the "Embellishment of the Garden and Farm" at our next meeting, on the first Tuesday of February next. Unanimously adopted.

Rev. Joseph Carter, of Brooklyn.—The complaints of our Long Island farmers are before us, as to the very short measure of the

city manures, delivered to them—some also of the coal ashes in it. As to that, I have tried an experiment with them upon three lots of ground, covering the whole surface with about one thousand loads of coal ashes. On the top of that layer, I put on eighteen inches depth of soil and manure. I had on it good crops of corn, cabbages, beets, &c. I formed on it some slopes of the ashes, in which corn and cabbage did well. The ashes are a great benefit to farmers.

As to warming and ventilating rooms—I use two heaters, one to cook with, the other to warm my parlors. These heaters or stoves are lined with soap-stone; the warmth given is very agreeable. They cost thirty-one dollars each. I find them economical—they consume but three tons of coal in a winter.

Chairman.—I have tried coal ashes as a top dressing on some of my grass, and the effect was very good; the growth better than usual, and the crop heavy. Corn likes it. I highly approve of coal ashes on land.

Mr. Lawton.—I have used it on my land and found it very useful.

Chairman.—The mechanical effect of it is to render the soil more porous.

Dr. Antisell.—The Long Island farmers complain that much of their soil is too porous already—all the coal ashes supply to vegetation are carbonates of lime and sulphate of lime, with some salt. Its utility on clay lands is purely mechanical, rendering it lighter, more porous.

On motion the following resolution was unanimously carried:

Resolved, That the Farmers' Club of the American Institute approve the exertions of Mr. Townend Glover, of Fishkill, in behalf of Pomology, and unite in recommending to the Government of the United States, or to some public institution, to purchase the entire collection of models, now before us, for the public benefit.

Subject for the next meeting: 'The embellishment of Farms and Gardens.'

The Club then adjourned to Tuesday, the seventh day of February next, at noon.

H. Meigs, *Secretary.*

February 7, 1854.

Present.—Messrs. Dr. Church, Capt. Holmes, Mr. R. R. Scott, Prof. Mapes, John Bullock, Toucey, George Dickey, R. L. Pell, Wm. Lawton, of New Rochelle, Pardee, Lodge, of Westchester, Van Burkirk, Judge R. S. Livingston—about fifty members.

William Lawton, of New Rochelle, in the chair.
Henry Meigs, secretary.

The committee to whom the subject of short measure of city manures was referred, presented the following report, viz:

American Institute, Farmers' Club.

The Committee of the Club report, as to measurement of city manures, the following voluntary statement of farmers, viz:

Nicholas Wyckoff, of Bushwick, Long Island, says:—I have always been a farmer, and am so now. I have always used much manure which came from the city, more formerly than now. (Formerly \$500 to \$600 from the city; now not more than \$100 worth, because I am not dealt justly with, in the manure or the quality.) Formerly we had two classes of manures—one called the best, and the other refuse. Sales always made to us by the load. In Bloodgood's time, we got from him almost fourteen bushels to a load of good manure; not so much sand, paving stones, bricks and refuse. Now, we sometimes get nine and ten bushels to the load. Now, it never overruns ten bushels to the load of inferior manure, sand, coal ashes and refuse stuff; the cinders make the ground pack and hard. We pay the same price now as formerly, that is, twenty-five cents—the same for the last twenty years and more. Now, we have to throw out the paving stones, brick-bats, &c., at the dock, and that lessens still more the measure of our load.

Large quantities are left on the dock, which we have paid for. By some means they get some green sumach in the loads, which, when green, is injurious to our crops—it contains a destructive acid; when long dead, it becomes fit for grass land, &c. In Bloodgood's time, we got the refuse manures for a shilling a load, half price.

Messrs. Geo. Hulst and Jos. M. Hunt, fully concur in the above statement.

January, 28, 1854.

Thos. Antisell, Henry Meigs, R. S. Livingston, Committee.

Annales de la Societe Imperiale d'Horticultnre de Paris. Nov. 1833. [Extracts translated by H. Meigs.]

Report on the 5th part of the Natural History of the State of New-York, consecrated to agriculture, by Dr. De Bouis. Read 20th of October, 1853.

You present to our eyes
None but the most precious fruits,
Cultivated by Pomona.
They have beds for cradles,
Emeralds for their thrones,
Gold and purple for their mantles.
RACINE, Port Royal Landscape.

Gentlemen—You have received the magnificent work whose title I have just read to you by the indefatigable hands of our fellow citizen, M. Vattemare, through the generosity of the liberal and enlightened administration of the State of New-York We ought to render also our thanks to Mr. Vattemare, who, after having enriched your library with such valuable works, well knew that this great work would be most acceptable because it treats of those matters which are the constant object of your studies. We do utter eulogium upon the government of the State of New-York, our thanks are truly due to it, and we may be permitted to cite that government as an excellent model for other countries, and even to our own, which has the first rank among civilized nations. It is true that we have had the description of Egypt, of Greece, of Algeria. We possess the great work of our geographical engineers on the charts of France; a geological descrip-

tion of France, almost finished, with a remarkable map of precious character. We have also, what is no less excellent, that is the statistical labors of Messrs. Dufresnoy and Elie de Beaumont, rich in documents—but as concerns our natural history—*nothing!*

SOME VEGETABLES OF CHINA.

By Henry Meigs

Pea Nuts are largely used for making oil. Bene seed also for burning, for cooking, and for medicine. Castor oil plant leaves are fed to silkworms. The Castor oil of Calcutta is the best in the world. Luconia makes *liquid Indigo*, which is much used by the Chinese. Cotton seeds are fed to cattle, both after being pressed for the oil and unpressed. The oil is used for burning, as medicine and to cure freckles. The oil is somewhat mucilaginous, and before they are fit for burning they require the method used to separate the gum for train oil. The experiment has been tried in the Southern States on a small scale.

Indian Corn is raised in India generally, China, Luconia, Java, but does not enter much into the consumption of these people. The Chinese eat it cooked, when green, as we do. It is not exported.

Gram—A grain somewhat like our buckwheat, much larger and of a reddish color. Its shape is three cornered—is grown all over India—used as the staple feed of horses, elephants, camels, sheep, &c., but little used for human food. Indian corn is not fed to animals. Yams plenty—very farinaceous. Cocos, a root like yam or potatoes, is grown largeiy in the English settlements on the Straits of Malacca.

Carrots of a particularly fine quality are grown in China—they are very sweet and nutritious—far superior to any we have.—These people consume large quantities of them, and of cauliflowers and cabbages. They use the cabbage much as the Dutch do saurkraut. They understand manure well, and spare no pains to have it. Their system of culture is of high manuring.

Coffee, of fine quality, largely cultivated. In Ceylon the coffee farms are estimated (600 of them) to be worth about fifteen mil-

lions of dollars. There are planted on one acre about eight hundred trees; each tree will average from six to eight pounds of coffee, and of the best quality known, superior to Mocha.

Tobacco is almost universal in the east. The best is from Manilla and Persia—the latter is used by the Arabs of Arabia, the Red Sea, Egypt and Palestine. It is of a very fine quality. The Manilla is always sold in the shape of Cheroots. China tobacco is poor. The eastern tobacco chewers also chew with it, betel leaf, area nut and other stimulating articles, and they are ten times filthier chewers than our American tobacco chewers. We could sell American segars well—at not over 8 or 10 dollars the thousand in India. The Chinese use large amounts of pork, lard and oil.

The Secretary read the following letter from Wm. J. Townsend, recently a farmer near Astoria—an active friend of the Institute:

Skeneateles, Feb. 4th, 1854.

Hon. Henry Meigs, Dear Friend,—I am living here upon a farm which overlooks one of the prettiest lakes in the world. My land is a dark colored loam, with a subsoil of clay or hard pan. When I bought this farm, I was told that it was a sinking fund to all who ever owned it. So you see, that I had poor encouragement to commence with. I have commenced by draining it with tiles—making compost heaps, which every field shall get as fast as I can do them. In the spring I intend to keep an account of all the crops raised, and all the work done, and send it to you, so that you may tell whether it is a sinking fund or not.

I think I shall be able to make a fine show at your next fair. I will try. I shall send (in season) some grafts of the finest apples that went to the city last fall. I sold 150 barrels there. I will send you apples with the grafts, as I have no names for them, and cannot find anybody that knows it. I wish you to find a name—or name them.

How does the Farmers' Club get along? I have not received the proceedings since October, nor anything from the Institute

since the last Fair. Tell Mr. Chambers I do not like to be forgotten. I take interest in the Institute, and will do all I can to make it prosper. Send me choice seeds. There is a beautiful farm of 100 acres here, near me, for sale, fronting the lake, with hawthorn hedge on the whole front of the road. If any one wants a beautiful place, here it is—send him to me. It is but a few minutes walk to the village, &c. I remain, yours,

W. J. Townsend.

The chairman announced the subject for the day:

EMBELLISHMENT OF FARMS AND GARDENS.

R. R. Scott.—The subject is not so unimportant as may at first sight appear, and, if considered in an extended sense, is worthy of more attention than some of the gentlemen present, accord to it. Embellishments may be considered in two classes; those which, while they afford ornament, are also remunerative, or at least of some utility. Ornamental farm buildings may be considered as embellishments, while they may be more convenient than those constructed without ornate character. A very important point may be gained by embellishing the farm. Those persons accustomed to city life, and opposed to living in rural residences, may be induced by degrees to take an interest in agriculture, tending to draw more capital into this most healthy and remunerative off all occupations. As to the embellishment of the garden, the garden properly laid out, is itself an embellishment as a whole; but if the proper taste is not displayed, and the various objects thrown together confusedly, it ceases to be so. It would appear presumptuous in me to occupy the Club, when others, much more experienced, have declined to open the subject. My purpose was to show, that economy and embellishment might be united to a certain extent.

Mr. Meigs recalled the beautiful arrangement of garden or farm, recommended by the late Chancellor Livingston, for our latitude and climate. That the land should be chosen, having a slope from north to south. On the north side, a grove of lofty forest trees, thick enough to break up the gales; then all trees and plants in regular succession from north to south, diminishing in

height, so that the southern boundary shall be occupied by plants as close to the ground as strawberries—thus the sun and air will reach all of them, as light and music reaches every one seated in an Amphitheatre.

Prof. Mapes.—I came in this morning, not knowing the subject under consideration, but, in order to keep up the discussion, I will say a word or two, not pretending to be able to dictate to men of refined taste and knowiedge in the strictly ornamental department of farm and garden. But I do deem the very shape of trees an important matter, for grace and beauty in them, however natural, as in the races of all kinds, animal and vegetable are often spoiled by numerous circumstances. When we desire to give to our grounds the beauty of trees, we select them, and if they have not naturally their appropriate beauty, we must regulate that by the pruning knife, and by all the methods used to improve their appearance. The eye readily detects the departure from those lines of grace, in which Hogarth found the laws of beauty. And the interspersing trees of different figure, leaf, branching or flowering in clumps, in every way to vary the view at every step, having regard to the horizon; or by any system, except sharp angles, squares and straight lines.. Let no man make the road to his dwelling straight to his front door. The natural reason for making the approach a curve, is the superior facility of driving a vehicle to the landing at the front door easily, as well as the beauty of the curve of plants, flowers and trees of its borders. Mr. Morse has lectured well upon this subject, and the genius of Downing was equal to its perfect execution. McNamara's clumping of trees on his plan is fine indeed! All stop to admire them. And in arranging the plants, &c., we must obey the principles of Chromatography (arrangement of colors), for colors can be badly grouped. How would a lady look whose head dress was composed of the discord in color? Red head dress, yellow body, and blue petticoat! three distinct pieces of a woman. The following plants require care as to the points of view, which they are to occupy, and the time of their bloom. Attention is required as to the various elevation of trees and plants. A place which is arranged with taste, is to its owner a

source of constant pleasure, and to his friends and the public; and when it is necessary to select it, its embellishments are often richly paid for.

Chairman—Some think that costly buildings, highly ornamented, are best; but they are not the true ornaments of a garden or a farm. Do not begin your farm with costly gate posts; begin with the embellishments of nature, her most beautiful plants, shrubs and trees—and also such as are of peculiar value. Plant black walnuts, ash, beach, elm, &c., and let the lawn around the house be attended to among the first things. Let it be an acre at least, for, besides its lovely clumps of flowers and shrubs, you can cut off as much grass for soiling as off any other acre. Let the garden be two acres—first useful for the kitchen and the dessert, next for ornament. I began on my place thirteen years ago; planted young black walnuts, which are now a foot in diameter, giving fine shade places for the swing. They are splendid trees, and, I may say, cost nothing. Our native butternut trees are also beautiful. I have known fine houses without the embellishments of agriculture that no one would give a decent rent for. A two shilling tree set out, becomes worth eight or ten dollars in six or seven years, they increase so fast. When one wants a country seat, the first questions are, What trees? what fruit are on it? The purchaser is determined by these. No man is so poor as to be unable to set out a tree—if he owns land. Let the $15,000 house, bare of fine trees—alone. The cottage truly embellished will for ever attract, while the other is repulsive. Your good fruit trees give profit. I recommend the copper beech as a beautiful tree. The cedar of Lebanon is admired by every one. The one on Mr. Ash's place at Throgs Neck is admirable; it is about 70 years old. For a farm properly so embellished (buildings being the same) I would give three to five thousand dollars more. The taste for the ornaments of the farm and garden is universal. See the branches, the bouquets of flowers in everybody's hands, coming to town. It needs no reflection; the taste is there without it. All flowers—even the dandelion is picked by the road side, and carried along. We can make fig trees bear well in our climate. The English walnut is valuable for its fruit

as a pickle; it is always worth a dollar a hundred for that purpose. All growing while you are fast asleep. Arbor vitæ is a noble ornament; forms fine screens to fields. Syringa should be about the house; cherry and apple trees not far off, their blooming is delicious.

Mr. Pardee—I feel the importance of the embellishment of farms and gardens. It is but little done as it should be. Downing made its importance felt; his papers were valued. Such papers as his are much wanted. Great effects are seen from Downing's works. One farmer brought from the forest to his place noble trees, to grace an unsightly spot—sugar maples, thirty feet high! He spent fifty dollars apiece, and fixed them just where they ought to be on his farm. He selected the best trees from nurseries, and he has now one of the most lovely places in America. There are many people who desire to embellish their lands, but really do not know how, and they remain bare. Some put out trees too small; some fail. They must learn how to transplant trees of good size, so that instead of waiting ten years for the beauty, they can have it the first year! Many of our forest trees are noble. I have known an hundred dollars refused for a single tree. I have made it a point, I have insisted on planting out none but perfect trees. One who knows, can always keep his trees in perfect condition, in symmetry and style. One who does not know, should go see examples, such as Mr. Pell of Pelham, and some others. Nothing like a full examination to learn how it is done; I did so, and have profited by the time spent in such examination. One of my most useful and delightful ones was at Downing's, in his life-time. Look at the Boston garden. Look at Dr. Hull's place, back of Downing's. He paid fifty dollars each for balsam firs, five to six inches in diameter, and thirty feet high. Transplanted properly as to season, &c., they all grew well. I would do so on a blank farm, if I had to borrow money to do it with.

Mr. Meigs—I have often seen dwellings covered with trees; do not think it healthy, nor beautiful. The dwelling should be high and dry, open on all sides to light and air; low shrubbery may be near, but no heavy masses of foliage burying the house

(as we very often see it,) making it damp, mouldy, mossy, dark, uncomfortable.

Mr. Meigs proposed the " Breeding of fish in our rivers, lakes, ponds, &c.," for the next subject. It has assumed lately an important aspect in Europe. Much new information can be given at the next meeting; and all that can be brought by members is extremely desirable.

Prof. Mapes proposed to add, " Early spring plants, and treatment of small fruits." Both were adopted.

Prof. Mapes.—I have experimented three year with the briars: bore a hole four feet deep with a post hole borer, fill in with proper soil and put in the raspberry or other briar, and it thrives three times better. Try it in an old post hole so filled up. The depth of the hole drains off superfluous water.

Mr. Meigs said, that the flowering peach was a great ornament, and lately in France they have one that bears good fruit—ours seldom, but their branches are so many wreaths of double small roses.

Mr. Lawton.—And the double flowering cherry, which is very beautiful and should be alongside of the peach.

Mr. Lodge said, that he had embellished many places—there is no tree, new to me, these forty years past. I once had grape vines trained on my house; I took them away. An open greensward next to the dwelling is best. Roots of flowers and clumps of shrubs may be added. Sheep are pretty objects on the lawn.

Judge Livingston said, that he was not fond of having trees very near his dwelling.

Mr. Lodge said, that the purple beech, the copper beech, and the cedar of Lebanon form splendid ornaments to a place. Ash's place, where that noble cedar stands, was once a nursery of five hundred acres.

Mr. Van Boskerck advised the introduction of the magnolia into the ornaments of the place.

Mr. Lodge.—Not the magnolia grandiflora, but the magnolia glauca. The first does not stand our latitude well. I have accustomed my lovely white camellias to stand our winter out doors, in somewhat sheltered situations. They bloom beautifully, at a temperature of from 34 to 36 degrees of Fahrenheit's thermometer.

The rhododendrum russelliana ought to make one among the embellishments too.

Chairman.—So should the hydrangia. I have had it thrive out doors, by merely heaping about it some earth, and covering it over with leaves; and it blooms afterwards beautifully, in season. Too much caution cannot be observed in establishing the plants and trees, that are to stand for our lifetime. We are too much in the habit of crowding trees and shrubs; don't plant too near; be bold: take room enough!

Prof. Mapes.—The seeds of the magnolia are interesting. Each of them has, what may be called, an umbilical cord. When the seed parts the cord and falls, it appears almost always to bury itself in the ground. I tried to make the seed bury, by throwing them with the hand strongly upon the ground, but they did not bury.

Chairman.—I have frequently looked for the magnolia seed under the trees, but could not find any.

Mr. Lodge.—That seed comes from the magnolia tripetala, not grandiflora.

Chairman.—Straw is much used to wrap plants for winter, but I find it not good. The buds come too soon and too tender in spring; they do better laid and covered with earth.

Mr. Lodge.—I leave my Bourbon roses uncovered; my Boursault, also, which is a fine bearer.

Chairman.—I have the Greville rose, which I much admire; clusters of twenty to thirty roses on one stem, and all of various colors. They sold for five dollars a plant, when they first came here in 1828.

Mr. R. R. Scott.—It is not now held in the first class of roses, but I agree that it is beautiful.

Chairman.—I have another, the little white musk cluster rose; has a powerful perfume.

Mr. Scott.—A great noise was made once about the Augusta, or yellow perfumed rose.

Mr. Pardee.—It originated in Ohio; a gentleman brought it to Syracuse, where Messrs. Thorp, Smith & Hachett nurserymen, raised twelve thousand plants, and then sold them at five dollars apiece. Their fragrance is exceedingly fine; they are about the diameter of the cabbage rose, and are semi-double.

Mr. Birdseye, of Ohio, presented some cuttings of a new gooseberry, discovered by Mrs. Genung, in Steuben county, growing in low ground. The cuttings were distributed among the members

The subjects for next meeting, are, "The Breeding of Fish," and "Spring Planting and the Treatment of Small Fruits."

The Club then adjourned to Tuesday, February 21, at noon.

H. Meigs, *Secretary.*

February 21, 1854.

Present—Dr. Alexander H. Stevens, R. L. Pell, of Pelham, Solon Robinson, Judge Livingston, Judge Van Wyck, Dr. Lambert of Peekskill, Mr. Bullock, Editor of the *Artisan*, Mr. R. Robinson Scott, Mr. Van Boskerck, Dr. R. T. Underhill of Croton Point, Mr. Birdseye, and Mr. Burr of Ohio, Mr. Chambers and others—about thirty in all.

Dr. Underhill, in the Chair. Henry Meigs, Secretary.

The Secretary read the following letter from Mr. Warrens, of Vienna, Austria, to him, viz:—

Vienna, January 25*th*, 1854.

The Hon. Henry Meigs, New-York.

Dear Sir,—I hope you will pardon the delay in fulfilling your request of last spring, but I have had nothing which I thought would interest you. I have not forgotten the extreme kindness you showed me while at New-York.

I have now permanently established myself here in Austria, and find that my undertaking is going to be a prosperous one, as our our American Agricultural Implements are preferred to all others, even the English, which should be superior to all others, but ours being so much more simple in their construction, and of such superior material, that they are obliged to have the preference wherever they may be introduced.

My implements have been introduced on some of the principal estates of Austria, Hungary, Galicia, and Bohemia, &c., and their application has proved them to be of such utility that I am scarcely able to fill the demands, so that I am now manufacturing them myself.

I send to you for examination, samples of meal made from corn cobs and stalks, by means of a newly invented machine of Hungary. By analyzing the flour, it is found to contain a great deal of nourishment for man and beast. The machine first prepares the cobs and stalks to size No. 3, which I send you about as coarse as hominy ; then it is ground in grist mills to the condition of ordinary Indian meal, as you see in samples 1 and 2.

The machine can be sold in America, for from one to two hundred dollars. You will oblige me by laying the subject before the Institute.

J. C. WARRENS.

The Chairman stated the subjects of discussion for the day to be

"BREEDING FISH" AND SPRING PLANTING, AND THE "SMALL FRUITS."

Mr. Robert L. Pell, of Pelham, being well known to have practised on a considerable scale in his ponds at Pelham, was requested to give information to the Club, among whose members several have been eye witnesses of his success.

Mr. Pell—I am pleased that the subject of fish has been introduced before the Club this morning, as it will enable me to make a few remarks concerning them, their habits, &c. For the last

thirteen years, I have given the matter great attention, and must confess to having derived a vast deal of pleasure from the study. The flesh of fish is less nutritive than meat, but very tender, soluble, and sufficiently substantial for man to subsist on, and enjoy health. In Iceland, the northern part of Norway, and Liberia, fish, fresh and dry, form the chief food of the inhabitants; and in Greenland, almost the only aliment. Fishes are divided into three divisions, viz: those which inhabit the sea—those which live exclusively in fresh water; and, lastly, those which migrate from salt to fresh water. The muscles of some fish nearly resemble flesh; for example, the sturgeon and whale; others are disposed in flakes, as in the cod; others are fibrous; some are fat and oily, others dry.

The livers of all fish contain much oil. The flavor of fish is influenced much by the food they eat, and by their age; some improve as they advance in years, and others deteriorate. They are always in season for the table before spawning, and rarely after; for during the season that nature prepares them for that interesting period their muscles become enlarged and strengthened; they eat voraciously, and lay up much fat—as the time approaches, they endure much fatigue while searching for the proper spawning ground, and their incessant motion until the operation is performed, by which time they become weak, and almost unable to swim; and if used as food at this season, the flesh will be found thin, unpalatable and of a blueish color. The quantity of roe contained in fish is immense: for example, 300,000 ova have been counted in a cod; 200,000 in a sturgeon; 170,000 in a pike; 80,000 in a carp; 70,000 in a perch. The skin of most fish is encased with scales, and the thickness of the skin varies according to their hardness. The surface of the scales is covered with a gelatinous substance, which defends them from the action of the water. The Tench, of England, secretes by an apparatus formed by nature for the purpose, a slimy, mucous substance, which adheres readily like court plaster to a wound on any other fish, and cures it in a few days; sonsequently, the tench is known as the physician of fish. When in England, I was walking over the grounds of a well known nobleman, and as we approached one of his fish ponds, he called my attention to two fish, one a tench, and the

other a barbel; the barbel was wounded, and several times came in close contact with the tench; his lordship observed, the doctor has cured him: and he further stated that he had placed pike, and a pickerel in a pond with small tench, and that they were kept without food until nearly starved, but would not destroy the tench; their own progeny were then thrown in, and they devoured them at once.

Fish that swim near the bottom of the ocean, are very long lived, because they consume a minute quantity of oxygen, and the difference between the warmth of their blood and the water is scarcely perceptible—on the contrary, those swimming near the surface consume a large quantity of oxygen, and die immediately after being taken from their native element. Some kinds of fish migrate in immense shoals at certain periods of the year, for the purpose of depositing their spawn in positions where the young fry may find the proper food when they come to life; among these may be named the herring, mackerel, &c. I have succeeded in fresh waterizing several varieties of sea fish, such as the shad, sturgeon, bass. The large shad were taken from the Hudson river very carefully, and carried singly in a silk pocket handkerchief, to a pond near by, and there held in their natural position, until they caught two long inspirations; after which they had gained sufficient strength to leap out of my hands in spite of all my endeavors to restrain them. If permitted to go before recovering thus, they turn upon their back and drown in a few minutes; if a single scale be torn off during the transportation, inflammation sets in, commencing at that point, and the fish dies within ten days—once each week they were salted until spawned; their fry thus became fresh water fish, and thrive remarkably well. I find them much more tenacious of life than the parent fish. The striped bass and sturgeon do equally well. I have sturgeon in several of my ponds nine and a half feet long, weighing several hundred pounds, and capable of drawing a boat with a man in it with great rapidity for many minutes.

Last summer I tried a very interesting experiment with the ova of fish, which gave me infinite satisfaction, and proved conclusively to my mind, the possibility of importing from any part

of the world, prepared spawn, of almost any variety of fish, and hatching the same without much probability of failure. The experiment was thus: two men were ordered to draw their nets in the Hudson, late in the shad season, and the females caught, were gently stripped from the gills down, and then the ova permitted to fall easily in a tin pail, one third full of water. The males were then served in the same manner, and their melt allowed to come in contact with the ova of the females; the mass was gently stirred, and thus impregnated; placed in a pond, a few inches under the surface of the water, near the inlet, covered partially with gravel, and surrounded by the finest wire netting, to prevent molestation from trout. In a few weeks, small shad were produced in great numbers. I have sent to England for the ova of the barbel, carp, and tench, and propose in the spring to obtain the roe of salmon from the East, and plant it in the creeks, entering the Hudson river. In ninety days thereafter, the young fish will appear, and during that season and the following winter they remain in the neighborhood of their birthplace, in shallow water; the ensuing winter they seek deeper water in the same locality, and the following spring deposit their eggs in the creek in which they were produced. Although the salmon is a seafish, their ova can only be hatched in fresh water, and the young fish can live in no other, until about two years old. If placed in the Hudson, they would soon make their way over the dam at Troy, and all the tributaries of our noble river, would teem with salmon; they readily leap up a fall of from 20 to 30 feet.

On my farm at Pelham, I have eight artificial fish ponds, averaging fourteen feet in depth, in which there are forty-five different varieties of fish from our great lakes and Europe. They are so divided that harmony is established between them all. For the past ten years, I have been enabled at any time to call my fish by ringing a bell; they approached the shore in large quantities, eat bread out of my hand, and permit me to stir them around in all directions. There are several gentlemen now present, who have witnessed this, and who have seen full grown shad and sturgeon of great size in my ponds. I know of no pets more confiding than fish, or more easily tamed; even the notoriously wild pick-

erel, and tyrant pike, come instantly at the ringing of the bell, and consume small fish with apparent pleasure.

It would be an easy matter for gentlemen residing on the Hudson river, between New-York and Peekskill, to stock the salt water coves, formed by the Hudson River railroad, with fine English fish, by importing the spawn impregnated—for example, the famous sole, turbot, whitebait, coal-fish, anchovy, &c. At the expiration of three years, our coast would produce an inexhaustible abundance of these delicious fish, many of which might hybridize with ours. The age of fish is indicated by the concentric rings on their scales, if scale fish; if smooth, by the rings in the vertebræ of the back bone. I propose to apply to the Legislature, this winter, for the enactment of a law, making it incumbent upon all persons in the State, who derive their livelihood from the capture of fish, to plant each season a certain quantity of impregnated spawn, on their respective fishing grounds, under the direction of the Magistrate of their respective district, in which the fishery may be situated.

Breeding Fish.

(Prepared by Henry Meigs.)

We take great pleasure in making the following extract from Professor James Renwick's life of Clinton, published by Harper & Brother, in 1840.

Dewitt Clinton to Mahlon Dickerson:

Albany, Dec. 13th, 1823.

DEAR SIR:—When I had the pleasure of seeing you at your house, I promised, in reference to the prosperity of your fish ponds, to communicate to you a method of raising trout, that has been successfully adopted in Europe.

About forty years ago Mr. Jacobi, of Hanover, after preparing a trough with gravel at the bottom, through which spring water was made to flow, took a female trout, and pressed and rubbed its belly very gently, by which means it parted very readily with its spawn, without any injury, in a basin of clear water. He then then took a male trout, and rubbed and pressed its belly gently,

in the same manner, to let the milt or soft roe enter the same basin, where the female roe was, and then stir them together. The same result would follow, if the roe were cut out of dead fish, and mixed together in the same way. He then spread the mixed spawn in the trough, and let in the water. [A more detailed account of this process may be found in the 34th vol. of Tilloch's Philosophical Magazine.]

In this way he bred annually vast quantities of salmon, trout and other fresh water fish. We have so good indigenous fish, that it has not been thought worth while to import any new species. The common carp was introduced into England, in 1514. Its favorite residence is in slow and stagnant water; it unites rapidity of growth, with longevity, and is very fruitful, a single carp having produced 342,144 eggs; and it is also considered excellent food It is a hardy fish, and may be imported alive, or its spawn may be put up and transported in jars, as is practised, in similar cases, by the Chinese, &c.

Mr. Meigs.—Above a hundred years ago, Mr. Tull, famed for his agricultural success, had fish ponds, so full of fish, that they had not room to grow to the desired size. He castrated numbers of them, both male and female, (at the right season, when the ova and melt are ready) and found these castrated fish to grow much larger than their natural size, were more fat and were always in season for the table. A particular account of the process of castration is given by Mr. Tull, at full length. He says, that, in England, spawning time is very various—trout in or about Christmas, perch in February, tench in May, pike in March, carp in May. With tolerable care, but few fish die of the castration.

Halliday watched the spawning of salmon, and observed the male and female rubbing against each other, in the same furrow in the gravel, and depositing their spawns at the same time. They take from eight to twelve days to make their deposits. The eggs of a salmon are from 18,000 to 20,000, says Johnstone, who counted them. Sir Humphrey Davy says, that the female deposits her eggs slowly on gravel, and the male sheds a white seminal

liquid upon them, and both fish cover the eggs with gravel. The young fish appear in March, if early warm weather prevails. The fry differ in size. Sir Wm. Scott says, that he saw the young salmon rise from the gravel, like a crop of oats or thick beard grain, rising up all around the stones in very great numbers. The tails come up first, and a part of the pea is yet on the head. The eggs are hatched in about six weeks.

Paris, Dec. 29, 1853.

Honorable Henry Meigs, *Secretary of the American Institute:*

Dear Sir,—As the new science of pisciculture (breeding fish) is comparatively unknown in our country, and as I have lately, through the courtesy of Mr. Coste, a member of the Institute of France, and Professor of Comparative Embryogeny at the College of France, had an opportunity of examining the process now in successful operation at the College, I take great pleasure in addressing you a short description of it.

The eggs selected have been those of trout and salmon. They are brought in boxes from different points, the eggs being disposed in layers between fresh leaves. The boxes may be tight, and if kept at a moderate temperature may in th s way be transported an immense distance—some have been from fifteen to twenty days on the journey. There seems to be nothing to prevent a system of international exchanges of fish eggs which shall be equally successful with that established by that most excellent and distinguished man, M. Vattemare, who (I may remark *en passant*) has done more to make the great resources of our country known to Europeans, and especially to France, than all the other individuals, taken collectively, who have ever visited the United States.

At the College of France, the eggs are placed in oblong earthenware troughs, in single layers, upon trays of willow work, so that the water may circulate freely around them. For convenience of running water, these troughs are arranged in pyramids, and a small stream of water is constantly flowing into them. The eggs, after forty days, are hatched, and the young trout and sal-

mon are seen swimming about in one part of the trough—while in another part of it the eggs are in the different stages of incubation. Fishes of the size of eight and of twelve inches in length, are exhibited in the laboratory. The freezing of the water does not seem to have a deleterious influence upon the process, as this has occurred several times during the cold weather now prevalent in Paris.

The preliminary process consists in taking the female fish, at the proper season, squeezing out, with the hands, the ova (eggs) at certain intervals, into a glass basin, and afterwards the male fish is treated in the same way—the two fluids being mixed with a glass rod, in the basin, until they acquire the consistency of *skim-milk.* This operation may be frequently repeated, during the season, and without seeming to do any injury to the fish; on the contrary, Mr. Coste thinks that they thrive under it. Mr. Coste is a great enthusiast on this subject, and thinks that it promises immense advantages, if only viewed as a new branch of industry, not to speak of other considerations. He tells me that his next endeavor will be to introduce sturgeon into the river Rhone, where, as is well known, they existed in large dumbers during the Roman dynasty. In breeding fish in lakes and ponds a tin box, perforated with small holes, or a box made of two sieves, is used, to protect the eggs from being devoured by fish.

Mr. Coste has written a small work on this subject, which I hope soon to be able to send out for your library.

In our own country, Dr. Ackley, of Cleveland, Ohio, is, I believe, one of the few who have undertaken this business on a large scale. Dr. Brainerd, now in Paris, informs me that Dr. A. has given up his professorship, and retired from practice, in order to give all his attention to this subject.

The *American Balance, and the Collection of Weights and Measures*, recently presented to the French Government by order of Congress, at the suggestion of M. Vattemare, are attracting much admiration. They are deposited in the *Conservatoire des Arts et Metiers* (or Patent office). Visiting that Institution a short time since with Mr. Vattemare, it was with great pleasuse that I heard

the testimony of Mr. Silbermann, the chief Director, on this subject. He says: "I know of no instrument equal to the American Balance for the precision and rapidity with which it performs its office. I prefer it to any other. It is so nicely adjusted, that with twenty pounds in each scale it indicates with facility the twenty millionth of a unit of difference between the two scales. Another great advantage consists in the small number of oscillations." The Balance was constructed at the United States Mint, under the supervision of Professor Bache.

I hope to send you by the first opportunity the report of Mr. Silbermann on this subject.

The adoption of the decimal system of weights and measures, in France, is found to answer so admirably that efforts are making to introduce it into England, and it is extremely desirable that but one system should obtain throughout the whole civilized world. Our fellow-citizen, Mr. Hickson W. Field, is much interested in this subject, and is engaging in an extensive correspondence in regard to it. I am sure that the American Institute will take pleasure in forwarding this important matter, by giving it the whole weight of its immense influence.

Beet Root Sugar.

The sugar used in France is manufactured, as is well known, for the most part from the beet, and 160,000,000 of pounds of beets were used last year in its production. Of this, 16,000,000 were converted into alcohol. By means of recent discoveries, great improvements have been made in the manufacture of sugar, there being less waste and a purer sugar. The present price of sugar is 16 sous the pound ; of alcohol, 32 sous the pint, both of which pay a very heavy tax.

Bread in Paris now sells at four sous the pound, government paying the bakers the difference between its actual cost and the selling price. For the first fortnight in November, the enormous sum of 600,000 francs was paid to bakers ; but it is money well expended, as with cheap bread, there can hardly be a revolution. I would advise you by all means to keep up the relations with Mr. Vattemare, as in the way of exchanges, or of any information

you may require of matters and things in Paris, he is of all others your man. His address is 39 Rue de Clichy, Paris.

Weather very cold; Seine frozen over this morning; thermometer 21° Fah.

With great respect, your obedient servant,

(Signed,) JOHN G. ADAMS, M. D.

Rue de Dauphin, No. 1.

The Chairman—This subject rises in importance, as we gather knowledge of its practicability, on an immense scale, and of its very great utility in providing all the best kinds of fish for mankind. And every farmer who has a swamp can profit by digging out all the muck and mud, and putting it on his land, then filling it with pure water; thus ridding his place of the evil miasma which arise in warm weather from the muck pond; then by filling it with the best sorts of fish; then by planting the most delicious plum trees all around the banks of the pond, and leaning over the water, so that the curculio (which now destroys almost all our plums) will not touch a single plum, or if he chances to forget himself for a moment and makes his crescent incision, never puts the egg in it, because he knows that when the plum in which the future curculio is, drops from the branch, it must fall into the water and the progeny be drowned. I am treating my ponds in this manner on a large scale; and when the plums are ripe I hope to enjoy the gathering of them into my boat. Such is the plan for gaining health, best fruit, fish and the landscape beauties also; and to gain all this, there is no insurmountable difficulty in the way.

Dr. Stevens adverted to the former abundance of shad and salmon in many of our now deserted rivers. The old plan of getting rid of the too plentiful salmon by selling (in all cases) so many shad provided the buyer would take so many salmon along with them; and, in my judgment, the persons employed in our great fisheries have the greatest advantages as to breeding fish. I call their attention to it.

Judge Van Wyck saw in a great abundance of fish a great source of manure for our lands, used wherever it can be. It is well

known to be excellent as a fertilizer, and the grand prize of a thousand pounds sterling offered in England for a substitute for guano is claimed by a man who proposes employing the large schools of fishes, which can be taken by the seine, to make artificial manure.

Solon Robinson spoke of the important breeding of fish already in full practice along our coast. I mean oysters, which are by proper planting continually supplying our markets with countless millions of those (to every body) delicious shell fish. Why, sir! a gentleman south of us, whose farm is large and finely tilled, grows oysters on his shore and makes three thousand dollars profit per annum, which is more than his land plantation yields him. Our western waters lack eels—they may be filled with them readily by sending the eggs there. Many of those western waters are peculiarly suited to eels, who love turbid muddy waters. This fish in abundance would be very acceptable to our western world.

Dr. Lambert, of Peekskill, who has taken much interest in this subject, was requested to speak of it. He remarked, that he felt a strong interest in it—even professionally, for he was convinced that a fish diet was remarkably suited to intellectual men, by its favorable effect on the brain and nervous system.

Our food is productive of various effects, according to its various natures. I would call one sort of food, that maintaining heat, *calorific food*, other sorts, *nutritious food*, such as repairs the tissues. Some food is cooling. A fish requires a food, which will supply it with its portion of warmth, small as that is, and it requires a pretty even temperature of water. Put a fish into water which is a little too warm for him, and he shortly seems to be dying—now plunge him into cool water, which suits him, and he immediately recovers his activity. A fish is sedentary in his habits; he moves with great ease, when he pleases; his specific gravity is nicely adjusted to that of the water. He has the faculty of making *nine pounds of fish* out of *ten pounds of proper food.* At Saratoga, a practice has obtained of feeding fish *with mutton.* The sheep are worth a little more than their fleeces—say *one cent a*

pound. The mutton is boiled, and then given to the fish. They also catch poor fish to feed the better sorts. Messrs. Bunker say, the entrails of other fish are good to feed fish. Trout grow fast and large by feeding, and now are worth twenty-five cents, a pound—it is the phosphorous in fish that helps the human system.

Dr. Lambert reminded the Club of the old American indenture, providing that the apprentice shall not be compelled to eat shad often.

Mr. Burr.—The Chinese and East Indians feed their fish on rice.

Judge Van Wyck.—In some ponds, where perch, trout, salmon trout, and others were plenty, the pike and pickerel have been introduced, and they have eaten all the others up, so voracious are they; this, however, is not the case in all waters. The trout rarely goes into shallow water, but pike and pickerel will, in order to devour the spawn and the young fishes.

Dr. Wellington presented some of his "Granny Earl Apples," from the family farm. He says that they are not good specimens. They are remarkable for the smallness of their cores, so small that it is usual to eat them, cores and all. The Club thought them good, fair eating apples for this time of year.

Mr. Burr asked for the best method of saving raspberry plants, from injury by frost.

Mr. A. Saul, of Newburgh, the successor of the lamented Mr. Downing, replied, that he succeeded by trimming out the canes, before winter sets in; leaving none but those which are to bear the fruit next season,; then, while one man presses down the canes to the surface, another man, with a spade, casts over them earth to the depth of an inch or two—just enough to keep them down. That preserves the canes from being damaged by the changes of the weather, for it is the alternate thawing and freezing which injures them, and not steady frost.

I set my canes in rows about three or four feet in the rows, and the rows about six feet from each other.

Judge R. S. Livingston.—I lay my raspberry bushes from their respective rows over each other, and they always show the benefit of this protection by their vigorous growth, when summer comes.

The chairman spoke of the difference in the growth and strength of the canes in different soils and positions; in some cases the sap vessels become enlarged; such are less able to stand the cold; those of a slower growth are more hardy and less liable to break, when being laid down for winter. I can grow Isabella grapevines so slow, that they will bear our winter like white oak. A rank, rapid growth is not favorable to the flavor of the fruit.

Mr. Saul.—Succulent growing plants—such as are the Catalpa, Paulownia, and Ailanthus, bear our winter, but not the milder winter of England, because our summer enables them to become hardy, while the moist weather of England keeps them tender.

The subject of "Spring Planting and Small Fruits," proposed by Prof. Mapes for this day, will be continued at the next meeting, on the 7th of March next, Tuesday at noon. Strangers are always especially welcome, and admission is free to all.

Members are earnestly requested to bring to the Club, during all the spring meetings, such seeds, plants, cuttings, &c., as they consider to be valuable, and make exchanges with each other, according to the constant practice of the Club. He that brings one good thing can often take twenty away.

H. MEIGS, *Secretary.*

March 7th, 1854.

Present—Messrs. Livingston, Hooper, Robinson, Holmes, Toucey, Manice, Carter, Boskerck, T. B. Stillman, Archbald, sen., V. Wyck, Low, Coleman, R. L. Pell, Judge Scoville, Chambers—between 30 and 40 members.

Robert L. Pell, of Pelham, a vice president of the Institute, in the chair.

Henry Meigs, secretary.

Mr. Coleman, of Brooklyn, introduced Mr. Hooper, the naturalist, who, on being requested to speak of the foreign song birds introduced, obliged the Club as follows:

Mr. Hooper.—The lover of his country is well pleased at every improvement calculated to bring forth and develope the resources of that country, and thereby secure its permanent prosperity. But his wishes and his hopes are not confined to the actual utilitarian improvements, but extend to the ornamental and beautiful; and though his chief efforts are directed to accomplish the first, his heart exults with delight at the discovery or addition of any object which will increase the beauty, and expand the pleasurable interests of the land.

It was with such sentiments as these, that a few individuals, members of the natural history department of the Brooklyn Institute, were embued, when they expressed the desire to import the choicest song birds of England, with the hope of acclimating them to this country, that they might thereby realize the long cherished idea of increasing the beautiful, the poetic charms, always abounding in the feathered races around our dwellings. They had seen or read of the enthusiastic feeling created in England by the charming melody of their songsters. They had read the poet's eulogy, they had seen the naturalist's delight in speaking of the nightingale, the song thrush, and the black bird. They had witnessed the fullness of heart in which the very clod-breaking emigrant spoke of the skylark, and that even the time worn, and hope broken amongst them, amid penury and want, with none but heedless strangers near, would look up with smiling memory at the mention of robin red-breast.

It was thus that they resolved the experiment should be made, and to carry into speedy and actual operations their desires, in the summer of 1852, they appointed a committee of three, members of the society, for that purpose. The committee consisted of John Hooper, Saml. Lounsbury and Nicholas Pike. The location fixed upon as most desirable for the experiment was Greenwood Cemetery.

In the interim, Mr. Jas. Watters, a gentleman always on the alert when the exaltation of his country or his race are at question, met Mr. Perry and urged upon his attention the proposition. And that gentleman, always desirous to add interest to the Cemetery, at once fell into it, and guaranteed $125 towards its accomplishment.

The committee without delay wrote to Mr. T. Woodcock, a gentleman ever active to the interests of the Brooklyn Institute, and who was then a resident in Manchester, England, requesting him to purchase such birds, &c., as he knew were best calculated to fulfil the objects desired. And in the fall of that year, Mr. Woodcock purchased 50 skylarks, 50 woodlarks, 20 blackbirds, 20 thrushes, 50 gold finches, 20 robin redbreasts.

Mr. W. being about to visit the United States, brought them with him; but in consequence of the robins being confined in one cage, their well known disposition to destroy one another had free scope for action, and we suffered their loss. Upon their arrival in New-York they were given to my charge, and I kept them until the latter part of last April, when they were all set free in Greenwood, under the charge of a man on the grounds appointed by Mr. Perry for that especial purpose. Several times on visiting the grounds, I saw the goldfinches, and the man stated that they all returned to the cages daily for the food he supplied them with. In the middle of the month of November, when the weather was severely cold, six thrushes were seen in Brooklyn apparently seeking food, and we have reason to believe that these were part of our stock from Greenwood.

The success of the experiment cannot be proven until next spring of actually locating them in Greenwood; but we have cause to hope by reasoning from analogy.

Mr. Smith, from Birkenhead, England, brought over about 70 Skylarks, 15 years ago, for that purpose; but, in consequence of some disagreement with the mate of the ship, the birds were turned loose at the Narrows—Mr. Smith feeling disappointment, but not discouraged, on the following summer he imported a

fresh lot, and set them free on Long Island, near Cypress Hills. These birds located themselves in Gen. Johnson's Market Farm, at the Wallabout, between Brooklyn and Williamsburgh. They left every winter and returned in the spring, building, and rearing their young frequently in the same spot, for years in succession. And some of the members of our society paid annual visits to witness their progress, and be assured of their return. This they did every spring, until two years ago, when the farm was sold for building purposes, and the larks were consequently scattered abroad. The last summer I saw one of them rising in the air in full song, at East New-York, when I alighted from the carriage in which I was riding, and made enquiry of an Englishman, resident there, and he informed me, that he had seen 7 or 8 larks on the wing, in full song, at the same time, last spring, and, though he was surprised at the fact, he considered them consequently natives of this country. I saw four rise in a week afterwards in the same location; and I fear not but the skylark is now well established in this country.

From the fact of their annual return to the location they first adopted, we have good hopes that our Greenwood birds will do so likewise; and it is not until this fact has been proven, that. we can claim the experiment successful. But even should the birds not return to Greenwood, they will find an abiding place in some, more to them, congenial locality; and future generations will appreciate our efforts.

In introducing the song bird of Europe to this country, we claim to be free from the common prejudice entertained, that the American birds have no melody, and the American Flora no perfume. For we are well aware of the folly and ignorance of the accepted libel; and point with satisfaction at our beautiful Sialia, or Blue bird, whose song and domestic habits are so highly appreciated by every American eye and ear, as the Robin Red breast is in its native land. We are familiar with the sprightly and plaintive melody of our yellow Throat, Robin, Boblink, Grosbeck, and three score warblers, enlivening every thicket; and though last, not least, the plaintive melody of Philomela must give way to the plaintive melody of that sweet Beethoven of our

wood, the brown Thrush. Would that its duration were equal to its melody. And if we had none of these, a little farther south we have a bird most glorious, which, in its native haunts, possesses qualities of grace, vivacity and melody, which can challenge the world to vie with it—our own beautiful Mocking bird.

The same parallel could be drawn of our Flora. But we were actuated solely with a desire to extend the beautiful, by adding beauties to the beautiful. If we have been successful, we have received our reward, and urge others to do likewise. If any one will do so, I volunteer to take charge of them in this country, and use my earnest efforts to its success, free of cost or price, it being a labor of love. JOHN HOOPER,

The secretary stated, that the papers on the table, received by the Institute are from California, January 19, 1854. Vienna, January 25, Paris, January 24. That from California relates to a late exhibition of vegetables at San Francisco. Turnips 33 lbs.; cabbage 35 lbs.; beets 65 lbs. E. L. Beard's crop of potatoes on his farm in San Jose—630 acres, and upwards of 300 bushels per acre. O'Connel, of San Lorenzo, Alamedas County, two sacks (about 8 bushels) planted, and the crop 529 sacks. By Dr. Sam'l Murdock, of San Jose, from three potatoes— crop 12 bushels.

Mr. Meigs.—Dr. John G. Adams, now in Paris, has added to the favors from him—a small pamphlet, on Pisciculture, from which we translate the following:

"The numerous visitors, who kindly assisted at Chelles, on the 5th of June last, will recollect that Mons. Millet, inspector of waters and forests, at our request showed the apparatus used at Enghien, to deposit the fecundated eggs of fish artificially—so that every body could see the great simplicity of the process—every one remembers the great talk made on the occasion, lately by two fishermen, of Brest, Mons. Remy and Gehin, who have produced, artificially, a large quantity of fish. It seems perfectly practicable, to fill at pleasure all our rivers, streams and waters with all sorts of fish, not only what used to be there from the first flow of the river, but those that never inhabited its waters.

They put the fecundated eggs in little boxes, the covers of which are full of small holes, in a current of water suited to them. At the end of forty to fifty days, the little fish comes out of the egg. The experiment is positively successful, no doubt now remains. Learned men desire to know whether Messrs. Remy and Gehin have done anything more than to restore the ancient methods used by the Greeks and Romans? It is certain that the ancients understood it and used it to the fullest extent, and almost a century ago it was used by Jacobi. This subject is mentioned in the *Traite des Peches* of Duhamel Dumonceau, and in the *Soiree Helvetiennes*. M. Coste of the National Institute in his late journey through Germany to the Baltic—to study the history of the Sturgeon, states that in the principalities of Lippi-Dethmoldt, where Jacobi practised fish breeding, the trout are cheaper and more abundant than any where else.

M. Millet, (to whom the agricultural society of Meaux gave a silver medal, for his success,) without any help from government has established fish schools (pisciones) in the departments l'Aisnes, des Ardennes, de l'Eure and others. The Viscount de Curzay has given him funds to establish one at Enghein-les-Bains. The eggs to be sold cheap to be put in other waters. Clear and brief instructions will be printed to go with the eggs. They can be transplanted between wet linen folds in a little box. M. Millet's plan of covering the eggs under water with a sieve enables one to have, under a sieve of about fifteen inches in diameter *five hundred thousand eggs hatched.*

Mr. Meigs—The history of the mackerel is quite interesting. This fish, in natural history, bears the name *Scomber Colias*, and Spanish mackerel, and has for its travels a very remarkable range. In the letters from Constantinople, published by Harper & Brothers, in 1835, this fish is thus noticed:

Constantinople, *Feb.* 12, 1832.

This is the season for catching mackerel here. They come down from the Black Sea in immense shoals; and thousands, aye, tens of thousands of boats, come at the same time into the Bosphorus, employed in taking them in seines and gill-nets.

The quantity taken and sold every day, would appear incredible. They are from five to six inches in length, and nothing can be more delicate than they are. By the time they get to Gibraltar they are half grown, and full grown when they arrive on the coast of North America, three or four months hence, (that is, in August and September that they are abundant on the New England coasts. H. Meigs.) The Black Sea appears to be the great nursery for the mackerel as well as the palamedes, as they are called here—but tunny-fish, off the coasts of Sicily, Italy and Spain. (*Thynnus Vulgaris.* H. Meigs.) Myriads of them are taken during the few weeks of their running. They are generally from a foot to eighteen inches long, and an excellent fish for boiling. Indeed, there is no place so abundant in fish as the Bosphorus, and there is no place where there are so many taken. From the doors and windows of most of the houses situated on this beautiful canal—they take fish with lines—and in the fine, calm, and beautiful summer mornings, the bay of Buyucdere may be seen swarming with kaicks filled with the ladies and gentlemen of the Legation, and with those of the Frank families, and Americans and Greeks, engaged in the diversion of fishing. It, in fact, makes one of the few, and the principal of the amusements of the country. The large fishing boats employed for taking the mackerel and palamedes, (the name of the son of Nauplius—H. Meigs,) are generally fifty feet in length, narrow and sharp at both ends, and of the best construction for velocity. They are rowed by eighteen active young Greeks, who make them fly through the water, and there can be no scene more animating than to see half-a-dozen of these boats approach the quay, on their return from their fishing excursions, laden with the fish which they have taken *at a single haul of their seines !*

The Tunny is occasionally seen in New-York markets. (See *Storer's Book.*)

The great State work—the Geology, &c.—gives the following account of the spring and fall mackerel of our shores :

EXTRACTS.

Spring Mackerel. Scomber Scomber.—Arrives in great shoals off New-York and its neighborhood, about the end of May and the

beginning of June, when they are caught in great numbers and salted. Their numbers vary in different years. On the coast of Massachusetts, where the fishery is most productive—more than 200 vessels are employed. In 1837, Dr. Storer says that 234,059 barrels were taken. The range of this fish is but a very short distance beyond Cape Cod—the southerly range is not ascertained, but probably is to the Caribbean Sea.

Fall Mackerel. Scomber Grex.—According to my learned friend, Dr. Samuel L. Mitchell, " the thimble-eyed, bull-eyed, or chub mackerel, appears on our coast in the autumnal months, in great numbers. Dr. Mitchell mentioned the autumns of 1781 and 1813, as years in which they were particularly numerous.

In the early part of November, 1828, also very abundant, and many persons were poisoned by eating them. They are scarcely distinguishable from the spring mackerel, and hence Richardson and Storer have regarded them as merely the young of that species. But I prefer, with Cuvier, to regard it as a distinct species."

Vice-President R. L. Pell said that naturalists divide fishes into two tribes, viz: The osseous and the cartilaginous. In the former, the bones are hard, and contain a large percentage of phosphate of lime; in the other, soft, and consist chiefly of cartilage. This description, however, is not precise, for osseous fishes have cartilage, and the cartilaginous fishes possess calcareous matter in their bones. Fish generally, are very voracious, the greater number being carnivorous, feeding upon each other—the great upon the small. I have frequently observed the pike leap several inches out of the water and take a mouthful of small fish that were nibbling around a piece of bread. If we make a meal on fish, we find that a large quantity is necessary to satisfy us, and though not so strengthening as animal food, it occasions much less febrile excitement, and is particularly well suited to persons of studious and sedentary habits. Fish differ in their nutritive and other properties, like other animals, much depending upon the modes in which they are prepared. Its flesh is preferable in a fresh state; salting, drying and packing, alter its properties.

The flavor is likewise influenced in a degree, by the nature of their food; on this account, the same variety of fish varies in its taste on different sea coasts, lakes and rivers. Every part of the fish may be eaten with impunity; the roe is particularly nutritious and wholesome, and forms a delicious food. Caviare is the prepared roe of the sturgeon. It is steeped in brine, dried, and pressed into tubs, and used extensively by the Russians as an article of food during the season of Lent, in the Greek Church. In the Caspian Sea there exists a species of sturgeon called the sterlet, the caviare, prepared from the roe of which, is expensive, and used almost exclusively by the royal family of Russia. As far as my experiments have gone, I am convinced that almost all salt water fish may be kept in fresh water ponds, and that they will increase rapidly in size and improve much in flavor if properly fed upon liver, cut in small pieces, damaged rice boiled, or Indian meal mixed with blood, stale bread, &c. After one week's training, they will always come when called, and soon become more confiding than tame pigeons or barnyard fowls. In China, the art of fattening and preserving fish has been carried to great perfection. Near Canton, fish ponds are formed by excavating the ground, and as many store fish placed in them as they can conveniently hold. They are fed morning and evening with boiled rice, and occasionally with animal food. They grow from four inches to nine in a few months, when they are considered marketable. Draughts are then made, and the fish conveyed to market in large shallow tubs of water, alive, as they will not purchase them if dead. The spawn of fish is regularly transported from province to province, and deposited in proper breeding ponds where it is hatched, and the fish kept until large enough to take care of themselves, when they are thrown in ponds among large fish.

A few days since, I met the butcher of the steamship Pacific with a basket full of sole, (Pleuronectes Platissa,) which he had brought from Liverpool in ice, and I compared them with two varieties of flat fish, known in the market as flounders, and must confess that I could perceive no difference between them, and am firmly of the opinion that they are the self same fish. The sole,

next to the turbot, (Pleuronectes Maximus,) is considered the best flat fish in England, inhabiting the northern seas, the Mediterranean, and Baltic. It is a firm, white, delicate, delicious fish, and in the highest perfection for the table about midsummer. They do well, and breed in fresh water ponds. It is peculiar in its appearance; both eyes are on the right side, and its mouth, which is much distorted, is on the opposite side. It has small teeth in both jaws, the form of the body is oblong, with dorsal and anal fins extending to the tail.

Fish are oviparous vertebrate cold-blooded animals, having a heart consisting of one auricle and one ventricle, which breathe water, the principle organ of respiration consisting throughout the whole class, of bronchiæ or gills, which are attached to the hyoid bone, and covered with numberless minute close set blood vessels. The water fish take in at the mouth is not swallowed, but passes through the gills, and escapes by the gill apertures. The air contained in the water acts upon the blood, which is subdivided in the bronchial vessels, and after having been decarbonized is propelled to all parts of the system. They have a bladder located below the spine, by the compression or dilation of which they vary their specific gravity. They have no neck, which renders the after part of the body more free for motion.

The fins are composed of a thin membrane of great elasticity, supported by rays. The principal organ of motion is the tail; the dorsal and ventral fins balance the fish, and the pectoral is made use of to arrest his motion. The teeth of fishes are almost entirely osseous. Their scales are composed of two substances, one resembling horn the other bone. They are attached to the skin by their anterior edges, and consist of concentric laminæ, or rings. In the scale fish I think they reckon the age of the fish by the scale, and in the fish without scales I imagine the age is indicated by the rings in the vertebræ of the back bone. It is difficult to distinguish the sexes of fish except in the spawning season. When the male fish is in condition to impregnate the ova his milt will be soft, and flow readily by pressure; at other seasons it is quite hard. The eyes of the fish are differently placed, according to its habit; they have but little taste, and are not easily moved by being touched.

It has been generally supposed that fish are not possessed of the sense of smell. From several experiments that I have tried with three varieties, I am convinced they have; for example, a hook well baited with an angle worm was placed enticingly before a perch weighing one and a half pounds; he did not take the least notice of it. After encircling him five or six times, it was withdrawn, and a drop of the oil of rhodium was brought in contact, which was then dropped very carefully several feet behind the fish. Almost immediately he turned and seized the bait. Others, not before in sight, likewise made their appearance, when the same experiment was several times repeated, first with an unscented bait, which was spurned, and then with the scented, which was at once seized. Again, it has been denied that fish have the sense of hearing. I find them very sensitive to noise, and by numerous experiments am convinced their sense of hearing is acute.

We have a species of fish in the Hudson river, known as the bull head, that build a regular and well formed nest in the mud, among the river weeds, and there watch over and guard with unceasing care their tender offspring, and I have frequently known them to be thrown in great quantities from nests upon the shore at low water, during the prevalence of an easterly gale. Boys and men are often engaged on the flats in the river searching for bull head nests, and when found the fish become an easy prey, as they are very loth to leave their habitations.

The American carp likewise form large concave circles in the gravel near the shore, which they cleanse and keep in the most perfect order, and there the ova are deposited and watched with intense solicitude by both male and female, and if any fish attempt to enter they are at once attacked most fiercely by the carp with distended gills, and driven off.

I have known the golden carp of China to be frozen solid in a globe, and when the ice thawed the fish was as lively as ever.

The eel is the most universal of all fish, and is, I think, produced by the deposition of the ova by the female, and impregnated by the male, in the same manner that other fish ova are,

but probably in the ocean; as myriads of transparent animalcules may be seen at the mouth of all our rivers in the spring of the year, early in the evening, on the surface of the water, slowly wending their way towards the tributaries. If examined with a microscope, the animalcules will be found to be eels. They are supposed to have no scales—this is likewise an error; with a glass you can perceive thousands of small scales completely covering the eel. They frequently leave the water at night, and search for insects in the grass; are tenacious of life, and will move after they are skinned and cut up.

Old persons should not eat fish often, as they are much less digestible, and contain far less nutriment than roasted animal meats. Fish are apt to putrify, and cause deleterious fermentation in the human system. The most pernicious are probably shell fish, being apt to produce erysipelas, especially when at all tainted. Herrings, mackerel, eels and salmon are the most unwholesome, because they contain oil. The best sorts are flounders, perch, smelts and haddock, and they should be boiled and not fried; in times of contagion fish ought not to be eaten.

Fish of all descriptions, whether stale or fresh, form an admirable and exceedingly enriching manure; the outer covering contains a large percentage of gelatine, their scales chiefly hardened albumen; the portions directly under the skin, fat and oily substances; their flesh much oleaginous matter, and considerable nitrogen. The bones are rich in phosphate of lime; these decompose slowly in the soil, and are converted into gaseous matters, which are the breath of vegetable life; such, for instance, as carbonic acid gas, and carburretted hydrogen. In fact you cannot possibly have a better fertilizer, but it only serves the agriculturists for a single crop. Consequently as 30 bushels are required to manure an acre, countless myriads would be necessary to meet the demand; the supply, however, will keep pace with the wants of the farmer, if my fish bill passes the Legislature, compelling fishermen to plant the ova of a few fish annually upon their fishing grounds.

Under the head of fish, it is scarcely proper to introduce the leech, notwithstanding it is a genus of aquatic animals, but as I

have given the cultivation of this useful little creature considerable attention, I will take the liberty of saying a few words on the subject. Some ten years since, I purchased in this city a large number of Swedish leeches, and stocked several ponds with them. It is a genus of suctorial animals, provided with a sucking apparatus at one end, and a mouth at the other, which is tri-radiate, possessing cartilaginous jaws, fitted with cutting teeth, so disposed that the three edges form three radii of a circle, consequently the bite is tri-radiate; the sucker forms a vacuum, and the blood flows readily. The leech has a long stomach, with cæcal sacs, which it fills rapidly, but digests slowly. A single meal suffices for a whole year, at the end of which time a portion of the same blood, undigested, but in a fluid form may be observed in the stomach. Its skin is composed of about one hundred soft rings, by which it moves rapidly in the water. On dissecting one, I found it to be viviparous, and a hermaphrodite, containing but one egg, enveloped in a cocoon, and covered with the excre. tion of porous matter, unlike anything I have ever observed in any animal before. It attains maturity in five years, and is of no use for medical purposes before; they prey upon each other, and are liable to numerous diseases, and parasitic animals — they breathe by their entire surface. I tried a singular experiment with one, last summer; thus—after attaching it to a rabbit, I cut off a small portion of the tail end with a scissors, as it filled itself; the blood passed off, the creature feeling relieved, continued to suck, in order that the deficiency might be made up. If leeches become scarce, one may be made to do the duty of many.

THE MALADY OF THE GRAPE AND A REMEDY.

We render hearty thanks to our intelligent and patriotic fellow citizen, Dr. Adams, now in Paris, for the following communication, on the great subject of the Malady of the Vine:

Morning edition of "La Patrie," Tuesday, Jan. 24th, 1854. (Translated by H. Meigs.)

For several years past, French Agriculture suffered much from several evils which have fallen upon it; and not only from bad crops, but sometimes a too great abundance of grain, for this is almost as fatal to the agriculturist, as the actual penury of crops, which is so injurious to our whole population. But not only the

irregularity of our grain crops, but added to the potato disease, our food resources and those of Europe are remarkably diminished.

The vine malady, prevailing throughout a large part of France, has reduced our means of foreign commerce, for we have long relied on the wine exported in return for imports—grain among others. Deep traces will be left of this in the wealth of France,—and for want of wines we must send out our specie. All this renders the vine disease of great importance, and we shall continue to publish all truly interesting information, relative to it.

A respectable clergyman, who is at the same time distinguished as a learned man, M. Bonnet, honorary Canon and Curate of Uzes, has, after scientific researches, found (as he thinks) the generating causes of the malady, and the methods of cure. We publish the letter, as follows:

(*From Dr. Adams.*)

Uzes, December 28th, 1853.

In the month of July 1849, I discovered the destructive animalculæ, which constitute our vine malady, and have made it my constant study since; there has not been a single day in which I have not done something in regard to it. In 1853, I studied the *Oidium*, also. As to the insects, it is not one single Acarus (a mite in cheese is an Acarus; the Greek word *acarus* means mite. Meigs.) All the species are very small, many are microscopic—cannot be distinguished by the naked eye. *Sarcoptes Scabiei*, itch-insects, are remarkable examples. The mites are active, and possess great power of life, resisting for a time, the *application of boiling water and they will live long in alcohol.* (Meigs.) Many kinds seem to have made our country their rendezvous, to plunge us into deep grief. In 1849, I discovered the Podurelle, one of the Acarian family. I sent some of them to Paris, Lyons, Nimes and Montpelier, for examination by learned entomologists. Only one of the gentlemen returned an answer, saying: "Your insects are Podurelles, of the Acarian family; they have two antennæ, a short sting, six feet, nine articulations of the body, traversed by a longitudinal bar; a tail which is curved under the belly, with which they leap."

The Podurelle, according to its age, is almost two millimetres long –that is, about the *twelfth of an inch*—and it is so abundant upon our diseased grape vines, that I have covered the surface of the water in a large tumbler, with the Podurelles which I took from one single stock. Its color is iron gray to the naked eye, but in the microscope it is of a violet tint—its body its transparent. It is so vivacious that, after fasting for three winter months, those that I have preserved, disappeared as quick as lightning, when I exposed them to the open air. The Podurelle never gnaws or bites; it pricks, and the holes it makes are scattered here and there, without any regular order over the vines. I have seen it lay its eggs, and had the patience to watch it for two hours together, on my knees, with my magnifying glass, laying its eggs upon a young grape vine leaf—which leaf was soon after pricked by the young larvæ, was sent to the Minister of Agriculture, with a certificate from the local authorities.

The second insect I found was not less abundant on the vines, that is the *Cryptophagus*. According to age, it is from two to three millimetres in length; it is a hexapode, (has six feet,) has articulated legs, a distinct head—its posteriors are furnished with two horny points—the body is whitish bordering on a clear yellow, it is transparent, well segmented, bristling with hairs that stand isolated (apart from each other). Linnæus and Fabricius have formerly placed it among the Dermites (skin-eaters;) it leaps with the agility of a grasshopper, by means of its two hind legs—it deposits its eggs over all parts of the plant, but principally on the extremities of the twigs of the grape vine, where it is found both at night and in the day, in the sun or in the shade. It runs about much and is seen to be always in motion, except while it is pricking the plant; it is only a sucker, it cannot bite or gnaw. Its excrements are watery, greenish, and it rejects them to the distance of three millimetres from its body. In pricking, after sucking the juices, it moves backward always one step at a time, pricking each time and making a perfectly mathematical line of holes—not so exact on the leaves and fruit, for it follows precisely the line of nerves of the twigs. The pricking of the Cryptophagus, like that of the Podurelle is microscopic at the commence-

ment, gradually increases, and in four or five days, according to the temperature, it becomes visible to the naked eye. The prickings of these two insects unite and form sores on the twigs, the leaf-stalks and on the stems of the grapes, in the interior of the cluster and on the berries. These sores never cauterize—they continue to sweat drops always, and thus exhaust the vine. This sweating of drops is always perceptible to the finger passing over the spot. This sap becomes extravasated (thickened) by the air and the sun, becomes gummy, turns black, corrupts and serves to fix the sporules of the *Oidium* (mould). So these insects prepare beds for that toad-stool, the *Oidium*, and it is when the sap of the vine in a corrupted state has lasted from ten to twenty-two days after the appearance of the microscopic spots, and always as the temperature and weather suit, we see the mycelium (the same thing as mould or Oidium) plant itself there, and growing its little stems and its ash-like sporules which are transported every where by the winds.

There is a third insect which I have found this year, but it is so active, that it has been impossible for me to seize upon it for examination. Of the three injurious insects described, I signalize the Cryptophagus as being the greatest enemy. For several years I have succeeded in my war upon them, by applying flames to the grapes, fumigations to the vines, and by giving them asphixia by other means. I have received a gold medal for my success.

REPORTED NEW CURCULIO REMEDY.

To the Secretary of the Farmers' Club:

The remedies which have been discovered within the past few years for the maladies that infect plants as well as the destruction or prevention of the ravages of insects, prepare us to receive every day from every enthusiastic observer additional propositions for potato rot, vine mildew, rust on apple trees, cracking of fruits, — and in some cases panaceas for degeneracy and decay — generally in a cautious and very prudent form, hinting that the discovery is a secret, for which its possessor must be remunerated. The action taken by this Club on the potato rot remedy during

the past year induced me to offer a few words of suggestion as to the *new Curculio remedy* lately said to be discovered, and which it is proposed shall be tested by three committees, who will be furnished with the secret by the discoverer or his agent. As these things are generally referred to the Farmers' Club of the American Institute, for approval or endorsement, I hope that the Committee, if such should be asked for, will not report without a fair trial or test on a sufficiently extensive scale. Any pomologist who has had the perseverance to discover or invent an effectual remedy should not be afraid to give it to the world and depend on the generosity of amateurs and the profession for his reward. Dr. Underhill has not asked for any committee to enquire into his remedy, and yet should his plan prove successful he must be rewarded.

R. Robinson Scott.

New-York, March 7.

APPROACHING REVOLUTION IN AGRICULTURE.

(From the London Farmers' Magazine.)

Mr. Meigs—Among the new lights which have of late broken in upon the minds of those who lead the van in the science of agriculture, there is none more interesting than that which seem to foreshow the possibility of producing crops without manure.

The Rev. S. Smith, of Lois Weedon, a few years ago took a field of four acres of gravelly soil, with clay, marsh and gravel as subsoil. It had been hard worked for a hundred years, but except a thorough ploughing, no other means were taken to improve it; not a particle of manure was applied. Wheat was then sown in single grains, three inches apart, in rows one foot apart ; a space of three feet being left quite bare between each three rows, leaving alternate strips all across the fields. The sowing took place in the beginning of autumn. And in November, when the planted rows began to show, all the intermediate three feet spaces were trenched by the spade, and six inches of the subsoil made to change place with the surface soil. In the spring, he says, "I well hoed and hand-weeded the rows of wheat, and stirred the interval with one horse scarifier three or four times up to the

very period of flowering in June." The crop looked thin and miserable until after April, when it began "to mat and tiller."

It did not turn yellow in May, and the stalks grew so stout and strong as to bear up well against storms. When harvested, the result was highly gratifying, for the yield amounted to from thirty.six to forty bushels per acre, or rather per half acre; seeing that as the alternate strips were left bare, only half of the field was really planted. The quantity of seed used to plant this half an acre was a little more than a peck. Adjoining this field was another which had four ploughings, ten tons of manure, six or seven times as much seed, and yet it gave a quarter less to the acre. This might be looked on as an accident, were it not that Mr. Smith has repeated his experiment year after year, and always with greater success.

The article reasons much to account for this, and Monsieur Baudrimont, Professor of Science at Bordeaux, has just published a work "on the existence of interstitial currents in arable soil, and the influence which they exert on agriculture."

Schleiden, of Germany, attracts attention now by saying that "the goodness of soil depends upon its inorganic constituents." "Soluble mineral constituents" are shown to be the characteristic of our cultivated fields. The amazing yield of Indian corn in Mexico, from 200 to 600 fold, is something which we cannot accomplish, and is in favor of the argument "that in no case do the organic substances contained in the ground perform any direct part in the nutrition of plants."

By calculation, there should be ten feet deep of pure organic substance on its surface, five thousand years ago.

Mr. Meigs.—Mr. Madison said to the Agricultural Society, which he joined after his presidential term, that the soil of the globe on an average level, was always maintained at about one foot in depth, the very quantity which man is able to till, and the greatest depth at which any seed can germinate.

FORKING MACHINE.

[From the same London Farmer's Magazine.]

Forking by rotation has long been a favorite problem. Samuelson, of England, deserves our notice for the progress he has made with it. It is the most formidable rival the plough ever met with. It is turning ideas into a different channel. Spading and forking were always known to be superior to the plough for greater returns from land. The machine (Samuelson's) when not in operation, is borne on two wheels, which also regulate the depth of the forking, by means of a crank and rack wheel behind. The forking apparatus consists of a series of small wheels with curved prongs or claws on their circumference, in number (the wheels,) according to the width to be forked. Each wheel may be termed a rotary fork, the prongs or claws, from their action and curvature, resemble the claws of a mole or a rabbit. The series of forks revolve upon an axle in a heavy subdivided cast metal frame, having stripping apparatus, or a corresponding number of subdivision bars from their claws as they rotate in forking. The weight of the framing corresponds with the length of the claws, and the two may respectively be increased in weight and length to suit any depth of cultivation required. The weight of the machine forces the forks into the ground. The curvature of the forks is one of the most important features in the machine ; they very much resemble in form the claws of the mole and rabbit. Provision may be made for adding or taking off weight, according to the condition of the land.

Judge Livingston presented bunches of Muscatel grapes from his farm, preserved in cotton, and being now in the condition, almost, of raisins.

Judge Van Wyck moved to add, as our next subject, to Professor Mapes' Spring Planting and Small Fruits, Indian Corn and its Culture. Adopted.

March 14*th*, 1854.

Present—Messrs. Livingston, R. L. Pell, Solon Robinson, Judge Scoville, Judge Van Wyck, Messrs. Pardee, and others.

Hon. R. S. Livingston, in the chair.

Henry Meigs, secretary.

The secretary read the following letter from A. H. Ernst, Esq., of Cincinnati, Ohio:

Spring Garden, Cincinnati,
February 24, 1854.

H. Meigs, Esq.—My dear sir: I thank you for your kindness in sending to me Mr. Lawton's circular relative to his extraordinary blackberry, and also for the many other obligations you have laid me under from time to time. Happy shall I be to deserve your kind remark and continued esteem.

In reference to the Japan pea, which I sent to you last year, a remark or two will not be out of place here. All the reports from those who cultivated it last summer, are most flattering for its *enormous product*, hardiness, and as to its edible qualities, which are said to be very fine—only, however, in a dried state. Mr. S. S. Jackson, of our vicinity, who put some of the seed into the hills which missed in his corn field, left the plants out until now; they lost few of their peas, and have stood the severity of the weather perfectly. They are easily threshed out, however. I feel desirous to promote the common welfare, and I hope that this pea will be fully tested. There is a discrepancy between the late Mr. Teschemacher, of Boston, and our distinguished botanist, Mr. Ward, of Cincinnati, as to the true character of this pea.

Mr. Teschemacher reported to the Massachusetts Horticultural Society, last year, upon a dry plant. Mr. Wood's were made on plants in all their periods, blown, &c. Now, what is said by the former as to the cajanus-bicolor, does not apply to this Japan pea, for the young peas of the first are said to be delicate for the table, while the Japan pea is not fit to eat when green, nor is the stalk, leaves, &c., fit for cattle to eat, when matured. The stalk is woody, and the leaves lose all their substance when dry. Mr. Ward, whose reputation as a botanist ranks high, has given me his written opinion on the subject, which I now send to you—that it is a phaseolus (a bean), &c.

Thanks, &c.,

A. H. Ernst.

MR. WARD'S OPINION.

The cajanus is a shrub of but two known species, both of which have yellow flowers. It is evergreen where it is native, and is stout and bushy in habit, being used in its native country for hedges. Its pubescence is velvety; its vexillum is flat, and bicallous at the base; its keel is straight and obtuse; it has two flowers to each pair of bractæ; and its stipules are leaf-like.

Our plant does not correspond at all with these characters, and I regard it is a phaseolus, and would describe it as follows:

Generic characters.—Calix Campanulate, bilabiate, upper segment two-toothed, lower, three—parted, pilose, ciliate; corolla papilionaceous; vexillum heart shaped, margins reflexed, keel incurved, pointed; style and ovary sheathed by the tubular torus; stem herbaceous or suffruticose, branching annual, hairy-pubescent, twining; leaves trifoliate, stipulate, leaflets stipellate; racemes short, axillary; pedicels bracteate, one-flowered, hylum of seed conspicuous, oblong; legumes compressed, divisions densely cellular.

Specific characters.—Phaseolus Japanensis—Pilous-pubescent, erect; leaflets ovate, lateral and oblique; petiolate, pubescent, rough, watered, obtuse, mucronate; petioles quadrangular, carinate below; channelled above, tumid at base; racemes many flowered, erect; flowers small, white, with purple centres; legumes hispid, pendulous, beaked, sub-falcate; seeds compressed, oval when green, pisi-form, buff-color, unmarked when dry.

I may add that the port and general habit of the plant is that of phaseolus—though the two genera are much allied.

FROM PAUL STILLMAN, ESQ.

Novelty Iron Works, New-York, Jan. 4, 1854.

Henry Meigs, Esq., Dear Sir: Accompanying this, I send you eighteen kinds of Musk-melon seeds, and two of the water-melon, and two of squash seed, obtained by me in October last of Capt. Edward Perin, who was many years commander of one of the English steamers from Panama to Valparaiso, now proprietor of

the Quinta Rauche, Marysville. They are part of above forty varieties planted by him during the past year. Several of them were believed to be entirely new in this country, the seed having been brought from foreign countries during the previous winter. Having had but two or three seeds each, of some of the varieties, he had failed to yet mature fruit of all of them, and some of them were quite immature when I visited him (Oct. 3.) Several of them were first cut that I might have some of the seed for presentation to the Farmers' Club of the American Institute or such other agriculturists as would promise to cultivate them with care and let me know the result, for his information. In the absence of the gardener I was unable to get the names of most of them, and have only the numbers by which the beds were distinguished. This omission I yet hope to supply. The descriptions of the melons out of season when I was there, were copied from memoranda made on the papers on which they were dried. Those tried by myself are described more particularly; and I will assure you that those were of varieties unknown by sight to me.

You will oblige me by distributing these among such of our friends as will take pleasure in their cultivation, and will be obliging enough to let you know of their results.

Since writing the above, I have received the enclosed list of the names, &c., of the melons, together with two additional varieties, which I have added to the others.

It will be seen that the names and descriptions, as taken by me, and as now given by him, do not harmonize, but I have no means of knowing why. Yours, truly,

PAUL STILLMAN.

Marysville, Nov. 20, 1853.

My Dear Stillman,—According to promise, I enclose you the seeds of the melons that were not ripe when you left. They were both of them excellent. The Quintay melon, the large one that you cut, weighed 21 lbs., and was almost or quite equal to the Pultoon or Valentia, the seeds of which I gave you—Pultoon being the proper name, not Valentia.

I enclose a list of the names of the melons the seeds of which I gave you. Heed, as I am anxious to know how they turn out, and which sort is most liked in New-York. I should like the person who plants them to preserve their names and numbers.

No. 4,	Early English	Cantelope	Middling.
6,	Astrakan	do	Bad.
7,	Tours	do	Bad.
8,	Quito	Melon	Bad.
9,	Nebb	do	Bad.
10,	Nebb	do green	Bad.
11,	Winter	Cantelope	Good.
12,	Sugar	Melon	Middling.
13,	Muscat	Melon	Good.
14,	Large Nett	Cantelope	Very good.
19,	Peruvian	Melon	Middling.
22,	Cousoinneus	Cantelope	Middling.
26,	Quintay	do	Excellent.
27,	Early	do	Good.
28,	Cameronian	do	Excellent.
29,	A Black	Melon	Bad.
30,	Mathesars	Melon	Bad.
31,	Trentham	Small Melon	Very good.
35,	Orange	Melon	Bad.
38,	Fine Beechwood		Very good.
40,	Citron	Melon	Very good.

Number Pultoon, alias Valentia, excellent.

I have given this character according to my own taste; but as they differ in flavor, what I dislike others may not.

CARROT SEED—BY H. MEIGS.

Complaints are made frequently of the seed—but not always justly. Sometimes a cold rainy spell comes after the planting, and where the land is stiff, and where the water does not run off readily, the seed may fail. It takes a long time to vegetate. Some persons steep their carrot seed as much as a day and a half before they sow it, and then roll it in dry earth or plaster of Paris before they sow it. Some people let the carrot seed even sprout

before they sow it. It is bad to sow so much seed as to have it come up very thick, for it is then very troublesome to thin out the plants. Carrots love a very light friable soil, inclined to sandy, and well fertilized.

Carrots increase in repute for feed to horses and cattle—and to man. For a horse it is well understood, that one bushel of oats and one of carrots are fully equal to two bushels of oats; and the excellent effect on digestion, both in man and horse, is now understood. And what makes carrot growing yet more important, is the vast superiority in amount yielded in an acre, for, while an acre yields some 40 bushels of oats, another acre gives readily 600 to 1000 bushels of carrots. So that a farmer can raise on one acre of his farm, carrots enough to equal the oats raised upon about twenty acres. What a saving in labor and space!

From Dr. John C. Graham, Paris, Feb. 4, 1854, a copy of the newspaper, *La Patrie*, containing some remarks on cattle for the shambles, from which we translate the following extracts—by Henry Meigs, Secretary:

REVIEW OF AGRICULTURE.

We published lately the decree of the Minister of Agriculture, Commerce and Public Works, relative to the competition established at Poissy—of fat cattle—to take place on the 12th of April next. The new arrangements are worthy of the highest commendation. They not only permit a far greater number of farmers to compete with their cattle of the French stock, and aged not less than four years, but not to be put in competition with those from foreign races, endowed with great precocity, and thereby having deprived our stock of those premiums they ought to have. We regretted deeply, last year, to see speculators crowned many times at the Poissy Fair. The next exhibition will be on the 12th of April next, and premiums to the amount of 68,650 francs, equal to $13,630. But that is not the only exhibition. Others will be held; at Bordeaux on the 21st of February; at Nantes on the 5th of April; at Lille and Lyons on the 10th of April, and at Nimes on the 12th of April. Fears have been felt, lest the high

price of feed and the intense cold of the winter should sensibly interfere with the fattening of cattle, but those fears happily are not realized. Prices of beef have, therefore, fallen a little—beef three per cent, and mutton twelve per cent, but pork and veal have gone up three per cent. As to our bread, it has been found advantageous to add bean flour to the wheat. It gives an agreeable taste and color to our bread. M. Gasparin shows, that the bean is worth, for its nutritive quality, 38 to 17 francs for wheat flour. The bean ought to be raised always on a great scale.

M. Delamarre in his interesting studies, shows the great losses caused by certain insects to grain in our granaries. Many experiments have been made—encouraged by government—to destroy the insect which attacks the grain in the granary. We have assisted and are happy to say, that M. Doyere has invented an apparatus, which is satisfactory. The apparatus was thought of by M. Cahin about the beginning of this century. It is a cylinder in which is a sort of drum, with channeled surface, making 400 revolutions per minute, and kills all the insects. It costs only 200 francs ($40), and weighs about 400 lbs. Millions of bushels of wheat from America are deplorably attacked by the insects, and may be saved by Doyere's plan.

EXTRACTS—By H. Meigs.

Entomological Society,
London, *Jan.* 2, 1854.

John Davy, M. D., read a paper recording the results of numerous investigations into the nature of the excrement of insects—both immature and adult—lithic acid (or uric,) being ascertained to be present in every instance; and he remarks on the effect on animal life and the economy of nature generally of such a fertilizing agent, so universally and abundantly distributed as it must be by insects.

AFRICAN COTTON AND A NEW SILK.

In the Geographical Society, a letter was read from Dr. E. G. Irving, Bart., to Dr. Shaw, stating his 4 years service in Africa. He was at Abeocuta, where he was very much struck with the people—of a superior capability—and with their soil. The Yarubas there cultivate carefully an indigenous cotton, of excellent

quality, which they manufacture into cloth for their own use. The Yarubas number three millions, and are all clad with their own made cotton cloth. They have also a new sort of silk, which excites anxious enquiry among our eminent merchants. Dr. Irving is going there again in July. He will have three metallic sectional boats, 50 feet long and 8 wide, to be manned by natives —to explore the upper part of the river. He calculates for the waters rising in the rivers for about 75 days after the first of July.

FARM YARD MANURE.

"The exposure which it is subjected to in many districts, both in the field and in the heap—cannot be too strongly deprecated. It is thus often rendered valueless—not a whit better than rotten stubble, not worth the cost of laying on the field. In such management, and for such managers, we may reverse our motto, and say, wherever there is *no* muck, there is *no* money."

INDIAN CORN MATURED IN ENGLAND.

Mr. Berkley Hill, of Stapleton—"I have tried the "forty-day maize," brought from the northern side of the Pyrenees, where it grows, and where the summers (like ours,) are short and wet. Seed sown about the 24th of May, to avoid the late frosts—earlier if the weather be mild. Some which I sowed in June, (says Mr. Keene,) ripened by the 12th of October. In April, 1852, I tried Mr. Keene's method.

In a garden having a south-western aspect, but no wall or other protection, yet warmer than the open field would be, I sowed my corn on the last day of April, dibbling in the seed at two inches apart, in rows three feet asunder. I found my planting a waste—for I had to take out so many as to leave the rest in the row from a foot to eighteen inches apart. One-half of them was matured with super-phosphate of lime, dibbled in with the seed—the other half with guano. The seeds super-phosphated appeared above ground in about ten days, while the guano matured seed did not appear for more than a fortnight. Those super-phosphated were fine and more vigorous plants, ripening their seeds sooner. My next sowing was on the 24th of May, without manure—ground tolerably good. They came up in seven days. It will be useful

to us, planted as a green crop, as it can be cut in six or eight weeks after sowing, and it makes capital hay when dried like meadow hay.

Mr. Pell was requested to say what method he pursued with carrots. He replied that he soaked the seeds for thirty-six hours before sowing them, in strong chamber-ley. The soil should be a rich sandy loam; carrot is an exhausting crop.

Solon Robinson—What do you think of growing crops, without exhaustion of the soil?

Mr. Pell—You can keep the soil in order by adding to it such of its eleven constituent parts as you ascertain by analysis to be wanting. We have lands near the Hudson which would not pay the interest on twenty-five dollars an acre, that can be made to pay the interest on one hundred dollars and more, by merely adding to the soil the absent constituents—at a cost of about three dollars and a half; and some crops fail if two, or sometimes but one of the eleven ingredients is not there; for example, if pot-ash or lime is totally absent, you will have no crop. If pot-ash, lime and soda are there in proper quantity—worth about three dollars and a half per acre—you will have heavy crops (all the other constituents being there also.) If the ingredients should be in the subsoil, then on deep ploughing the proper ingredients for plants are brought within their reach. This has been experimented in exhausted land here and in England. Some lands are so well supplied with these elements that their fertility is inexhaustible, apparently. The singular success of Rev. Mr. Smith, of Lois, Weeden (reported at our last meeting,) of getting better and better crops of wheat for some years in succession by tilling an exhausted soil in alternate rows of three in wheat and then three blank, and so on, is owing probably to his tilling the alternate blank rows deeply and bringing the subsoil which still retains the wanted ingredients to the surface and within the reach of the plants.

Solon Robinson—There are some lands among us which have yielded fair crops of Indian corn for more than a hundred years

with ordinary tillage and manure. Those lands must contain the eleven needed inorganic constituents spoken of by Mr. Pell.

Judge Van Wyck—Such lands are usually worked with abundant manure—barnyard, muck, &c., and lime also.

Mr. Pell—Every gentleman who buys a farm should in the first place procure analysis from agricultural chemists, and then restore all the missing ingredients to the land before he proceeds to planting. Let all remember the very excellent precedent set by Hon. Reverdy Johnson, on the worn out land bought by him for a very inferior price. He employed the chemist Stewart, of Baltimore, to analyse the soil of it. The chemist advised the application of about ten dollars worth of the absent ingredients to each of ten acres of that land. Mr. Johnson followed his advice, and reaped about thirty bushels wheat per acre on those ten acres the first year, and in the year before that experiment was so successfully tried, Mr. Johnson says that with ordinary tillage and manure he did not obtain a bushel of corn per acre. An analysis, properly made, is vastly more valuable than its cost. With a knowledge of the ingredients, and adding such as are wanting—and it may be only one or two—he can make a capital soil out of a worthless one.

The Club tasted the apples received, with grafts of their trees, from William J. Townsend, Esq., of Skaneateles. They are large —said by members to resemble the Cayuga Red Streak. The taste is sprightly, very pleasant, flesh remarkably tender, and it is a very good keeper, as we see.

Mr. Pardee—It is juicy, sprightly taste—a child, perhaps, of the twenty ounce Pippin. It is a good apple, and a good keeper.

The seeds on hand were then distributed among the members — who appreciated the melon seeds, brought by Paul Stillman, Esq., from California—and the Japan Peas, sent from Cincinnati, Ohio, by A. H. Ernst, Esq., of Spring Garden, and from Metuchin, New-Jersey, by Mr. Mundy and Mr. Gore, of New-Jersey.

The Club continued the subjects, "Spring Planting and Small Fruits," proposed by Prof. Mapes, and "Indian Corn," proposed by Judge Van Wyck.

Adjourned to Tuesday, 21st, at noon.

H. Meigs, *Secretary.*

Tuesday, March 21, 1854.

Solon Robinson, in the Chair. Henry Meigs, Secretary.

Mr. Meigs read an account of the cultivation of the white Silesian beet in England, which produced thirty tons of roots to the acre.

It was a variety of oval shaped roots, very rich, and affording an immense amount of food for stock. Good beet soil contains 50 per cent of sand. Clayey soils are not good. Horse and sheep manure are not good, and the roots contain no saccharine matter. Neither do old roots, and they part with their sweetness when kept over winter. The beet manure comes from the cow stable, and roots should be gathered before fully grown.

The Royal Agricultural Society of England, consists of two thousand members, who pay $5 annually.

Professor Mapes presented the club with two bottles of wine made by L. Rehfuss, and sent by Dr. Warder of Cincinnati, made by experiments in scientific manuring, that is by applying such ingredients to the soil as analysis had proved it required to make it productive in grapes by which the yield had been largely increased and the value of the wine increased 50 per cent over that made from the same kind of grapes, growing in the same vineyard with common manures.

The specimen offered was made in imitation of the Rhine wines, without any addition to the grape juice, which wines bear a superior character, and are very largely manufactured at Cincinnati, It is stated that Mr. Longworth alone will have 300,000 bottles for sale this year. This wine is made from the Catawba grape,

which is produced in perfection upon a vast number of acres around Cincinnati, and by special manuring, the quality of the wine is greatly improved. The two bottles were tasted by the members of the club without knowing which was which, but nearly all were decided in the opinion that that produced by special manuring was by far the best.

Professor Mapes stated that the principal ingredient used to produce this effect is potash, and that the additional expense does not exceed $5 an acre, while the increase of the crop is frequently worth more than a hundred dollars.

Upon the subject of early spring planting, or bringing forward plants for market gardening, Prof. Mapes said by means of cold frames such plants as bear transplanting can be brought to perfection a month earlier than by hot beds. This is particularly important in the cultivation of cauliflower, broccoli, lettuce, &c. Lima beans and tomatoes are grown by inserting the seed in little squares of sod, and started in beds or even in cellars. There is a difference of $3 or $4 a bushel between early and late tomatoes. Tomato plants should be started in deep narrow pots and suffered to remain until large enough to be hardy before setting in the ground, which is done by lifting the ball of earth which is done by reversing the pot in the hand. Prof. M. recommends close trimming in spring planting of fruit trees; and by all means that large holes should be dug, and in the bottom of that bore a hole two or three feet deep with a post hole auger.

It is a good plan to mix scarlet long radish seed with carrot seed; as they are stronger than the carrot and loosen the soil for the young carrots. The pulling of the radishes breaks the earth at a later period and gives the carrots a new start.

Raspberry plants must be covered in winter, and should be raised early in the spring. On setting raspberry plants, there is no better instrument than a post hole auger. Fill the hole with strong manure.

The best manure for strawberry is tan bark, or water from the tanyard. Tanner's acid improves the flavor of the strawberry

better than any other fertilizer. Mulching strawberry beds is highly beneficial.

Mr. Meigs stated that he had covered a strawberry bed with fine chips from the wood pile, to great advantage. He cultivates Lima beans upon short poles, and runs the vine upon strings from one stake to the other, by which he increases the product over any other method. Market gardeners pinch off Lima bean vines at five feet from the ground. This forms side shoots, and strengthens the main vine.

Upon the subject of applying guano to Indian corn, the Chairman said, he had lately seen it recommended in an agricultural paper in this city, to put it on with a spoon around the young plants, and afterward, just before the time of earing, digging it in with the spoon, to mix with the soil. He said he should like to see the writer of that article, digging in a dressing of guano with a spoon, upon a field of a thousand acres. He thought he would have the back ache. He thought a much better plan was to furrow the ground deep for the rows, and then sprinkle the guano, at the rate of 300 or 400 lbs. per acre, in the bottom of the furrow, and then turn back part of the earth, so as to have four or five inches of mould between the guano and seed. There is no land, unless absolutely as rich as garden mould, where such a course would not pay a profit. The best way, however, in all cases, for all crops, to apply guano, is to sow it broad cast, and plough or harrow it in.

In answer to a question, Mr. Robinson stated, that corn in Illinois did not average over forty bushels, and wheat ten bushels, per acre, for all that is planted. A gentleman present said, he had raised sixty bushels, per acre, in Adams County, without manure.

Mr. Robinson said, he was aware, that land in Illinois had produced corn every year for a century, without manure, and yet the cultivators did not get rich. The truth was, that, notwithstanding the application of manure to prairie land, generally did not pay for the trouble, nearly all crops might be doubled by the application of the right kind of fertilisers, and by ploughing deep, and using the subsoil plough.

Prof. Mapes said, that the fact stated about a great growth of straw, with small heads, proves this. It is a fact too, that the premium crop of corn in Illinois last year, was 154 bushels, per acre.

The subject of discussion for the next meeting, March 28, will be, Indian Corn.

The Club then adjourned to Tuesday, March 28, at noon.

HENRY MEIGS, *Secretary.*

TUESDAY, *March* 28, 1854.

Present—Wm. Lawton, of New Rochelle; Solon Robinson, Prof. Mapes, Prof. Hooper, of the Brooklyn Institute; Coleman, of Brooklyn; Mr. Low, Capt. Holmes, Judge Van Wyck, Mr. Waring—in all 50 members.

Mr. Wm. Lawton, in the chair; Henry Meigs, secretary.

BIRDS.

Mr. Hooper, of Brooklyn, said he had a few remarks to make upon the birds and their uses. Trees have their enemies in insects and their protectors in birds. He alluded to the fact that insects have destroyed many thousands of the turpentine trees in North Carolina. He gave a description of the various birds and the different purposes for which they were created. He deprecated the practice of farmers killing birds that are their best friends. He said that the King bird, so often charged with being an enemy to the honey bee, has been grossly slandered. That he kills flies on the wing is certain, but that bees are ever found in the crop of the King bird he denies. It is only through ignorance and foolish prejudice that this particular bird is ever destroyed.

BOTANY.

Upon the advantage of studying botany for the farmer, the speaker said that the wild growth of all lands indicate the quality and value of the soil and sub-soil.

COLD GRAPERY.

Mr. Secretary Meigs read a letter from Asa Messer, of Geneva, N. Y., upon his success in raising grapes in a cold grapery, of very simple and cheap construction. It is tended entirely by his own hands, as a matter of relaxation from business. He has 28 vines, consisting of 10 Black Hamburgs, 3 White Muscats of Alexandria, 2 Cannon Hall Muscats, 4 Golden Chasselas or Muscadine, 2 Black Prince, 2 Black St. Peters, 2 White Frontignac, 2 Grisly Frontignac, 1 Syrian. In planting, take out one foot of soil for future use, and then remove another foot, and fill six inches deep with broken stone. Then add manure, lime, bones, leather-scraps, and cover with soil. See that the bed is well drained. Make use of old plaster, particularly if the soil is clayey. Buy the vines in November in pots, and put them in your conservatory in April.

The chairman remarked that he had seen the conservatory mentioned. The Cannon Hall grape was a very superior one. The whole cost of the conservatory, forty feet long, did not exceed $125. He produces the Black Hamburg, White Muscat and several other kinds in great perfection. A cold grapery is a luxury that every one may indulge in who owns a garden, at a very small outlay of time and money.

Mr. Meigs read a Paris report upon the forced culture of roses upon 50,000 plants in one garden, all under glass, which afford flowers at all times of the year in the greatest profusion. One of the curious practices of this gardener is that he never waters his flowering plants in winter.

Mr. Fleet reminded the club that they had heretofore agreed to collect statistics and devote one day every quarter to this subject, which he considers of very great importance.

The subject of the day, Indian corn, was then taken up.

Prof. Mapes.—The subject for the day, Indian corn, is by far the most important subject which has been presented to the consideration of this Club. It may be said to be the staple and peculiar crop of our country. To it we are indebted, in a very

great degree, for our present prosperity. The export of this crop is fast becoming the *hydra* of famine throughout the world. Whenever Europe is short of food, America stands ready to supply the deficiency with the excess of her corn crop; and every American should feel a reverence for the corn plant beyond all others. No plant is more beautiful and none so well suited to the varieties of our climate; for anywhere between the 43d degree of north latitude and a corresponding parellel south, it may be grown in the greatest perfection. Its ease of hybridation has produced innumerable varieties, suited to every kind of soil and every degree of temperature. We have it from the time enduring hard corn of Canada, to the Stowell's evergreen for boiling in the unripe state. We have it suited to summers, varying from three to six months; thus we find it in the north requiring but half the time for its growth that is requisite in the south, and still in each locality we find kinds appropriated to the different length of summers. We may say of the Indian corn crop of America what Mr. Webster said of the turnip crop of England, that "its failure for 3 successive years would nearly bankrupt the nation." Fortunately, however, by the recent improvements in agriculture, we are enabled in the growth of this crop almost to defy drought, and to render every variety ot soil suitable for the production of maximum quantities. It is the food of both man and animals; and even its stalks, by proper treatment, have been rendered equal in value to the whole labor and expense of raising the crop. To it we are indebted for our fine beef, plentiful supply of pork, and to itself as an article of food. By it every freeman in our broad country is enabled to use meats almost as freely as the wealthiest citizen, and not, like the peasantry of Europe, confined to use to a great degree vegetable food alone.

We can obey the command, "not to muzzle the ox that treads the corn." The Indian corn crop of the United States, at this time, exceeds 700,000,000 of bushels per annum; and when we remember the fact that the average crop of the country does not exceed 25 bushels per acre, and that frequent instances are to be found in every State where, by judicious treatment, a hundred bushels or more per acre have been produced, it can readily be seen that the value of this crop, instead of being $350,000,000

per annum, as at this time, may be so increased by proper culture that its value may set at naught the necessity for new El Dorados. It is the plant of our country, and the olive branch might with propriety be taken from the claw of our national emblem, and the Indian corn plant substituted in its place. Joel Barlow well said in his ode to "hasty pudding":

> "My song resounding in its grateful glee,
> No merit claims; I praise myself in thee.
> My father loved thee through his length of days!
> For thee his fields were shaded o'er with maize;
> From thee what health, what vigor he possessed,
> Ten sturdy freemen sprung from him attest;
> Thy constellation ruled my natal morn,
> And all my bones were made of Indian corn."

I will not tire the Club with enumerating statistics relating to this crop. It is sufficient to know that the number of hogs fattened on corn in the United States is scarcely less than the number of its inhabitants, and that the quantity of lard oil now exported to Europe, and I am sorry to say is again returned to us in large quantities as olive oil, after purification, is so great as to form a staple of export. The sugar estates of the West India Islands and elsewhere, are mainly sustained by the use of American corn meal. When our Congress, gentlemen, shall become convinced of the necessity of a Department of Agriculture, the farmers throughout the United States may then know the means by which a few of their number are enabled to raise four times the average crop of the country per acre. On the present occasion I propose to enter fully into the best modes of culture. These of course must differ in different parts of the country. The same culture which will answer for the small farmers of the Atlantic seaboard would be impracticable in the immense corn fields of the far west, for there the amount of labor which may be judiciously and profitably applied would be impracticable here; and hence it will be necessary to state the methods applicable to different districts. Land at $200 per acre and at $5 per acre cannot generally be manured alike, even although their constituents and requirements may be the same; for the cheaper lands are so far from the manufacturing districts, that in some cases the necessary amendments to be used as manure for the soil

cannot be obtained, and the scarcity and high price of labor give rise to the necessity for the use of tools by horse power in place of any other mode of culture, and that of the simplest and most expeditious kind. It is known to those who have observed closely, that the roots of the Indian corn plant, in soil prepared to admit of their full ramification, will average in length 5½ feet, and hence the necessity of deep and subsoil plowing for this crop must be evident to all. When the constituents of this plant shall be spoken of, it will be evident that its inorganic requirements received principally in many soils from the subsoil, render deep disintegration necessary. It will also be evident that soils habitually wet cannot be profitably employed in the growth of corn without thorough drainage; for until surplus water ceases to occupy the spaces between the particles of earth, atmosphere cannot enter. Nor can the pulverulent condition of the soil result from this disturbance by the plow during the growth of this crop, if partially immersed in water, for their surplus water acting as a lubricator to the particles, causes them to settle in so compact a form that the corn roots cannot travel freely in search of their proper aliment. The different modes of culture adopted should always embrace such manipulations as will give the greatest amount of disturbance to the soil with the least amount of abrasion to the roots of corn; hence the original preparation of the soil before planting should be such as to secure the most mellow condition, and to the greatest depth. This will be perfect security against drouth; for wherever air can circulate among particles of soil colder than itself, it will deposit moisture; therefore, corn grown on subsoiled land free from excess of water, never suffers from drouth. The after-cultivation during the growth of the crop should be such as to render the surface at all times penetrable to the atmosphere and free from parasitic growth. The importance of our subject, Mr. Chairman, must be my excuse for entering thus minutely into detail. Of what is the Indian corn plant composed? Whence are these constituents obtained? What means can be adopted to supply such as are missing from the soil? It is well known to you that I have full reliance in the doctrine of adding to the soil such constituents of crops as may be missing from it; and by presenting the proper conditions and necessary

stimulants for their appropriation, that they will be taken up by the plant, and that success is certain under such treatment. You are also aware that I received from your institution a premium for a corn crop raised on soil which had the previous year refused corn; and that this crop was raised by the use of amendments costing less than $3 per acre, but which had by analysis been found to be absent from the soil and required by the crop. The details of that experiment have been published many times. I will therefore refer in brief to the analyses of the corn crop.

You are all aware that these are different in different stages of growth, and they have been so often published, that it would be unnecessary to treat of them separately. I shall, therefore, speak of the necessary constituents of the soil, for the entire completion of the corn crop, embracing all its stages of growth. You are, doubtless, aware, that the surface of the corn stalk has a coating of silica, which gives strength to the stalk. Indeed, it is to be found throughout the stalks, leaves and grain, and, when insufficient in quantity, a perfect organism of the plant cannot be maintained. This silica is the base of flint, the base of common sand, and, as found in some soils, is insoluble and cannot be appropriated for the use of the plant. When, however, the soil has a sufficient amount of alkalies, which have the power to combine with silica, and thus render it soluble, the plant can readily receive and appropriate it, and from this fact arises the necessity, in part, for the presence of those alkalies.

Analysis shows that corn requires potash, soda, lime, magnesia, and that each of these is capable of rendering the silex soluble and ready for appropriation; hence soils deficient in potash, lime or soda, can seldom be made to produce a full corn crop, and, in soils which are very deficient of those constituents, the use of barn yard manure without their separate addition, will not give full corn crops. Among the necessary constituents of corn, phosphoric acid is the most important. Thus we find that Letellier, in his analysis of the ash of the kernels, states, that 50 per cent. is phosphoric acid, 30 per cent. potash and soda, and a trace of sulphuric acid. As minute as this amount of sulphuric acid may seem to be, it is most necessary for the success of the crop. But

the phosphoric acid is the most important of all. Fields which have furnished for a series of years the food for growing animals and milch-cows, necessarily become denuded of phosphoric acid, to a greater or less extent; for every animal, every quart of milk, and every bushel of grain, or ton of hay, that has been grown on and removed from such fields, have carried away from them large amounts of phosphoric acid, and indeed we have not yet found the acre of land on which the corn crop may not be materially and profitably increased by the use of soluble phosphates, and it is for this reason, that hundred of farmers, within the last year, have been able to produce large crops of corn, varying from 75 to 100 bushels of shelled corn, per acre, by the use of the improved super-phosphate of lime. I am aware, Mr. Chairman, that this remark will render me liable to the attacks of the illiberal and unphilanthropic, because it is known that I have strenuously urged the use of that manure. But even the fear of such attacks is not sufficient to keep me silent upon this subject. I consider it a great moral duty to proclaim the fact, and I shall do so fearlessly. It is principally to the presence of the phosphates, contained in guano, night soil, etc., that render them, when properly applied, good amendments for the corn crop. The application of raw guano is not judicious, when it may be so readily improved by proper treatment. When this manure, or night soil is used, it should be sub-divided with such material, as is capable of taking up and retaining the ammonia, thus saving it from loss and preventing its too violent action upon the young plants. There is no necessity of killing the corn crop by guano. It should also receive dilute sulphuric acid, which, while it changes the carbonate of ammonia to the sulphate, and thus does away with its volatile character, at the same time tends to render the phosphates more soluble, and thus more readily usable by the plants; for, although the quantity of phosphate in guano is large, it is not sufficiently large to be in the true relative proportions to its other constituents for the use of corn, therefore, the phosphate it contains should at least be rendered soluble, so that it may be freely taken up. When bones, dissolved in sulphuric acid, are added to guano, in the proper relative proportions, the value of both is doubled by such union; and when dissolved bones are

added to the entire extent to which they may be profitably increased, the ammonia should be increased in the form of a sulphate, and as a stimulant for their appropriation.

It must not be supposed, Mr. Chairman, that placing in the soil all the inorganic constituents of crops is sufficient to secure their appropriation by plants. In addition to these, such nitrogenous matters must be added as will stimulate the plants to appropriate their inorganic requirements, and it is for this reason that the improved superphosphate of lime, Peruvian guano, night soil, and other manures fairly charged with nitrogenous matters, in the form of ammonia, are found to be so active and efficient; for while they supply the necessary pabulum, they also supply the means for its appropriation. In soils deficient in soda and lime, the salt and lime mixture, which results in carbonate of soda and chloride of lime, will be found to be efficient. Such soils as are deficient of potash may receive it from any of those manures which are known to contain it. Among these may be enumerated unleached wood ashes, potash sparlings, and all organic matter which by combustion would yield potash as one of its constituents. Where sulphuric acid and lime alone are wanted, sulphate of lime (plaster of Paris) will be found useful. I would not have it supposed, Mr. Chairman, in this or any other case, that I would object to the use of barn yard manure for corn. On the contrary, to the extent that the farmer can avail of it he should use it, and I should be happy if time would permit to speak fully of the manner and method of its use. But few farmers, sir, can furnish the necessary amount of barn-yard manure for all their crops to the full extent to which manure may be profitably used, and, therefore, I have treated more at length on the use of such manures as are accessible to all. I wish here, sir, to offer one remark in relation to leached ashes for corn. In most localities, leached ashes for this purpose are not worth their cartage. In soils very deficient of phosphate of lime, the small amount contained in leached ashes produces a crop, but this same amount of phosphate could be supplied at much less cost; for bones at $16 per ton, dissolved in sulphuric acid at $2\frac{1}{2}$ cents a pound, will produce the amount of phosphate contained in one bushel of leached ashes, at

a cost of less than four cents, and in a shape materially less expensive for handling, from its decreased bulk. The modes of planting corn are various; and I shall first speak of such modes as are applicable for its cultivation were the value of the product 40 or 50 cents per bushel. At such prices the increase of crops from proper manipulation is greater than the increase of cost consequent upon full and entire cultivation.

Planting corn.—The seed may be prepared by any of the usual steeps which are know to protect from the ravages of insects, etc., during its early growth, and to stimulate its early germination until ready to throw forth its roots. Among these may be named dilute sulphate of ammonia, saltpeter very dilute, cubical nitre, etc.

Preparation of the soil.—After thorough preparation of the soil by deep and subsoil plowing, and the addition of such amendments as analysis may prove to be necessary, the corn should be planted at slight depths in hills four feet apart in every direction, which will admit of more thorough cultivation in both directions than if planted in rows. I cannot but suggest that in the final preparation of the soil before planting, it would be well to run the new subsoil plough at a full depth in striking out the rows; this having been done in both directions will leave the intersections visible for the planting of the corn. From the peculiarity of this plough, the soil will be left in a much more divided condition than if disturbed by the surface plough alone. In these intersections the corn may be planted. When three inches high, this lifting subsoil plough, which will effect the soil at the surface for two feet each side of this line of travel, should be run in one direction, half way between the rows of hills, thus disintegrating the soil in the center to the full depth, disturbing it at the surface to the very plants, gradually lessening as it approaches them, so that none of the young roots are abraded by its action. It will now be seen that immediately under the corn is a deep disintegration, readily accessable to the roots, while the space between the hills is thoroughly pulverized and deepened as it recedes from the hills, so that the roots will not be inclined to travel

surface ways. At a proper time for a second ploughing the lifting subsoil plough may be run in the oppesing direction half way between the rows, thus rendering the soil pulverulent to a great depth at a later stage of the growth. The after cultivation may be conducted by the universal cultivator, set the whole width of four feet, or so near it as not to disturb the plants, and to such depth as will keep the entire surface free from weeds, and also open for the admission of atmosphere. The running of this cultivator, once in each direction, will be found to be more efficient than the ordinary use of the hoe, and at the same time securing flat cultivation. At the first application of the cultivator, or lifting plough, stimulating manures may be used to each hill with safety, and we have known many instances during the last year where one hundred bushels of shelled corn per acre have been produced by the application of two ounces of improved super-phosphate of lime to each hill, at the first hoeing or first cultivation. The result seems to be larger when stimulants are thus applied than when placed in the soil before planting. Indeed, when guano, or any other stimulating manure is used, it should be at the first disturbance of the soil after the corn is above ground, rather than before the planting of the seed.

Some growers prefer to plant the corn in hills as before named, and running a universal cultivator, with the two rear share teeth reversed, between the rows when the corn is three inches high. This throws a light furrow from each row in which special manures may be applied. A small sub-soil plow should then be run with the flat side toward the corn, the wing of the plow removed so that the lifting action of the nose only will be applied to the soil This should be repeated on each side of each row, so as to disturb the soil to a depth of ten inches before the corn roots are sufficiently grown to be abraded, and this disturbance will thoroughly mix the manure with the soil. The rear teeth of the cultivator may then be reversed and run again between the rows so as to replace this narrow furrow, leaving the soil flat. In place of a second hoeing, at the usual time, the newly invented horse hoe of Messrs. Ruggles, Nourse, Mason & Co., may be run in the opposing direction, clearing the ground of weeds, and leaving the

soil clean and pulverulent. Our large Western corn growers require more simple methods, and less labor, and for their use we can only recommend that after planting the corn by the machine drill, and cultivator or horse hoe, capable of disturbing the whole distance between the rows instead of the ordinary common hoe, and if this be properly conducted the economy of such practice will be evident. Special manures may be applied in advance of the use of this instrument when necessary. In some cases it may be found profitable to use the lifting subsoil plow in the center line between the rows, during the early growth of the corn in place of one of its cultivations, as this will leave the soil in better condition for after crops by its more thorough disturbance. The speaker here made some remarks relative to the advantages of flat culture. He also described the lifting double action sub-soil plow, one of which was shown to the club; and he also described a new horse hoe referred to in the foregoing. The mode of feeding corn stalks to cattle; their appropriation, &c., was fully described. He also referred to the preparation and preservation of Stowell's evergreen sweet corn, and also of a new variety of this corn produced by hybridation, by Stowell, within the last two years.

The same subject will be further discussed at the next meeting of the club, April 4, at which time Solon Robinson will give an account of the mode of growing corn in the Southern States, where it is often grown upon land never plowed—the hoe alone being used.

The Club then adjourned to Tuesday, April 4, at noon.

Henry Meigs, *Secretary.*

PREMIUMS

Awarded at the Cattle Show of the American Institute, Oct. 1853.

THOROUGH-BRED HORSES.

Judges—R. R. Morris, John De Graw, John Drew, Nathan H. Cooper.

Daniel Abbot, Brooklyn, L. I., for the best stallion, "Umpire." Silver cup or $25.

Wm. Webber, New York, for the second best stallion. Silver cup, or $20.

Daniel Abbot, Brooklyn, L. I., for the best three year old colt, "Mount Airy." Silver cup or $10.

L. A. Sayre, New-York, for the best two year old colt, "Miss Lightfoot." Silver cup or $8.

Thomas A. Mead, Greenwich, Conn., for the best brood mare and colt. Silver cup or $25.

Wm. H Van Cott, New-York, for a thorough bred colt. Diploma.

HORSES FOR ALL WORK.

Judges—Abraham Hatfield, F. L. Wyckoff, Williamson Rapalje, Valentine H. Peters.

John B. Rich, for the best stallion, "Jupiter." Silver cup or $25.

Wm. Rysdyk, Chester, Orange county, N. Y., for the second best stallion, "Rattler." Silver cup or $20.

Truman Derick, Troy, N.Y., for the third best stallion, "Young Norman." Silver cup or $15.

James Bathgate, Morrisania, N. Y., for the best brood mare and colt. Silver cup or $20.

Smith Burr, Huntingdon, L. I, for the best three years old colt. Silver cup or $10.

Philip Hornbeck, Rochester, Ulster county, New-York, for the second best three years old colt, "Cassius." Silver medal.

Wm. M. Rysdyk, Chester, Orange county, N. Y., for the best two years old colt. Silver cup or $8.

Wm. Watson, West Farms, N. Y., for the second best two year old colt. Silver medal.

Wm. M. Rysdyk, Chester, Orange county, N. Y., for a stallion, "Hamiltonian." Diploma.

Smith Burr, Huntingdon, L. I., for a stallion, "Columbus." Diploma.

Russell N. Isaacs, Saugerties, Ulster county, N. Y., for a colt. Diploma.

C. H. Sears, Fort Hamilton, N. Y., for a colt, "Daniel Webster." Diploma.

MATCHED AND FARM HORSES.

Judges—Thomas Williams, Jun., John Spader, Edwin F. Gray, J. H. Gardiner, Isaac Willetts.

William L. Cogswell, New-York, for the best pair of matched horses. Silver cup or $20.

W. H. Van Cott, 3rd Avenue, New-York, for the second best pair of matched horses. Silver cup or $15.

M. Morgan, New-York, for the third best pair of matched horses. Silver cup or $10.

Wm. H. Van Cott, 3rd Avenue, New-York, for the best pair of farm horses. Silver cup or $15.

Jordan L. Mott, Mott Haven, N. Y., for the second best pair of farm horses. Silver cup or $10.

E. C. Sedgwick, Brooklyn, L. I., for a pair of ponies. Diploma.

MULES.

Judges—F. W. Geissenhainer, Jun., William Bigelow, John A. Pool.

A. A. Paff, Jersey City, New-Jersey, for the best pair of mules. Silver cup or $15.

Todd & Robertson, Mott Haven, N. Y., for the second best pair of mules. Silver cup or $10.

NATIVE STOCK.

Judges—Thompson C. Munn, George Hartshorn, Timothy Mulford.

John A. Smith, Montgomery, Orange county, N. Y., for the best cow. Silver cup or $20.

William Baity, Morrisiana, N. Y., for the second best cow. Silver cup or $15.

George McDowell, Newburgh, N. Y., for the third best cow. Silver cup or $10.

R. R. Morris, Throg's Neck, N. Y., for the best yearling heifer. Silver cup or $10.

GRADE STOCK.

Judges—Isaac Skinner, John Wait, Robert Willets.

Henry C. Barretto, West Farms, N. Y., for the best bull. Silver cup or $25.

James Bathgate, Fordham, N. Y., for the second best bull, "Osceola." Silver cup or $15.

Frederick & William Bartlett, Marlboro', N. J., for the third best bull. Silver cup or $10.

David Dennison, Little Britain, N. Y., for the best two years old bull. Silver cup or $15.

Filkins Cheesman, Dutchess county, N. Y., for the second best two years old bull. Silver cup or $10.

Daniel A. Shuart, Little Britain, Orange county, N. Y., for the best yearling bull. Silver cup or $10.

John S. Bull, Orange county, N. Y., for the best bull calf. Silver cup or $8.

John C. Jackson, Astoria, L. I., for the second best bull calf. Silver medal.

George McDowell, Newburgh, N. Y., for the third best bull calf. Trans. Am. Institute.

James Bathgate, Fordham, N. Y., for the best cow. Silver cup or $20.

John A. Smith, Montgomery, Orange county, N. Y., for the second best cow. Silver cup or $15.

R. R. Morris, Throg's Neck, N. Y., for the third best cow. Silver cup or $10.

Daniel B. Haight, Dover Plains, N. Y., for the best two years old heifer. Silver cup or $15.

William Baity, Morrisania, N. Y., for the second best two years old heifer. Silver cup or $10.

Edward G. Faile, West Farms, N. Y., for the third best two years old heifer. Trans. Am. Institute.

William H. Bartlett, Amenia, Dutchess county, N. Y., for the best yearling heifer. Silver cup or $10.

Patrick Weir, Yorkville, N. Y., for the second best yearling heifer. Silver medal.

Henry C. Barretto, West Farms, N. Y., for the third best yearling heifer. Trans. Am. Institute.

Patrick Weir, Yorkville, N. Y., for the best heifer calf. Silver cup or $8.

John A. Smith, Montgomery, Orange county, N. Y., for the second best heifer calf. Silver medal.

Dudley Culver, Amenia, Dutchess county, N. Y., for the third best heifer calf. Trans. Am. Institute.

SHORT HORNS.

Judges—S P. Chapman, H. W. Tibbits, Edward A. Smith, Joseph Wasson, Thos. H. Rutherford.

Lewis G. Morris, Fordham, N. Y., and N. J. Becar, Smithtown, L. I., for the best bull, "Romeo." Silver cup or $25.

J. C. Jackson, Astoria, N. Y., for the second best bull, "Astoria." Silver cup or $15.

Gazley & Vale, Clinton, Dutchess county, N. Y., for the third best bull, "Sir William." Silver cup or $10.

Lorillard Spencer, Westchester, N. Y., for the best two years old bull, "Augustus." Silver cup or $15.

James Bathgate, Fordham, N. Y., for the second best two years old bull, "Sultan." Silver cup or $10.

Lewis G. Morris, Fordham, N. Y., for the best yearling bull, "Tommy Bates." Silver cup or $10.

Daniel B. Haight, Dover Plains, N. Y., for the second best yearling bull, "Henry Clay." Silver medal.

Lewis G. Morris, Fordham, N. Y., for the best bull calf, "Oxford Lad." Silver cup or $8.

John C. Jackson, Astoria, L. I., for the second best bull calf, "Tempest, 2nd." Silver medal.

Lewis G. Morris, Fordham, N. Y., for the third best bull calf, John O'Gaunt." Trans. Am. Institute.

Lorillard Spencer, Westchester, N. Y., for the best cow, "Esterville, 3rd." Silver cup or $20.

Lorillard Spencer, Westchester, N. Y., for 2nd best cow, "Phoebe 2nd." Silver cup, or $15.

Lewis G. Morris, Fordham, N. Y., for the 3d best cow "Bloom." Silver cup or $10.

Lewis G. Morris, Fordham, N. Y., for the best 2 year old heifer "Kate Hayes." Silver cup or $15.

Lewis G. Morris, Fordham, N. Y., for the 2d best 2 year old heifer "Romelia." Silver cup or $10.

Lorillard Spencer, Westchester, N. Y., for the 3d best 2 year old heifer "Beauty." Trans. Am. Institute.

N. J. Becar, Smithtown, L. I., for the best yearling heifer, "Suffolk Maid." Silver cup or $10.

N. J. Becar, Smithtown, L. I., for the second best yearling heifer "Lady Elgin." Silver medal.

Lewis G. Morris, Fordham, N. Y., for the third best yearling heifer "Lucretia." Trans. Am. Institute.

Lewis G. Morris, Fordham, N. Y., for the best 20 head of Short Horns. $40.

DEVONS.

Judges—Horace Bailey, D. L. Clawson. L. H. Cortelyou.

C. N. Case, Harwington, Conn., for the best Devon bull. Silver cup or $25.

J. N. Blakeslee, Watertown, Conn., for the 2d best Devon bull. Silver cup or $15.

Lewis G. Morris, Fordham, N. Y., for the best 2 years old bull. Silver cup or $15.

W. P. & C. S. Wainwright, Rhinebeck, N. Y., for the 2nd best 2 years old bull, Silver cup or $10.

E. G. Faile, West Farms, N. Y., for the best yearling bull. Silver cup or $10.

Samuel A. Smith, Smithtown, L. I., for the 2nd best yearling bull. Silver medal.

W. P. & C. S. Wainwright, Rhinebeck, N. Y., for the 3d best yearling bull. Trans. Am. Institute.

Jacob N. Blakeslee, Watertown, Conn., for the best bull calf. Silver cup or $8.

Joseph Blakeslee, Watertown, Conn., for the 2nd best bull calf. Silver medal.

W. P. & C S. Wainwright. Rhinebeck, N. Y., for the 3d best bull calf. Trans. Am. Institute.

Lewis G. Morris, Fordham, N. Y. for the best cow. Silver cup or $20.

E. G. Faile, West Farms, N. Y., for the 2nd best cow. Silver cup or $15.

Jacob N. Blakeslee, Watertown, Conn., for the third best cow. Silver cup or $10.

W. P. & C. S. Wainwright, Rhinebeck, N. Y., for the best two years old heifer. Silver cup or $15.

W. P. & C. S. Wainwright, Rhinebeck, N. Y., for the 2nd best two years old heifer. Silver cup or $10.

Lewis G. Morris, Fordham, N. Y., for the third best two years old heifer. Trans. Am. Institute.

W. P. & C. S. Wainwright, Rhinebeck, N. Y., for the best yearling heifer. Silver cup or $10.

Edward G. Faile, West Farms, N. Y., for the second best yearling heifer. Silver medal.

Edward G. Faile, West Farms, N. Y., for the third best yearling heifer. Trans. Am. Institute.

Edward G. Faile, West Farms, N. Y., for the best heifer calf. Silver cup or $8.

Lewis G. Morris, Fordham, N. Y., for the second best heifer calf. Silver medal.

Edward G. Faile, West Farms, N. Y., for the third best heifer calf. Trans. Am. Institute.

Lewis G. Morris, Fordham, N. Y., for the best 20 head of Devon cattle. $40.

Jacob N. Blakeslee, Watertown, Conn., for a herd of Devon cattle. Diploma.

AYRSHIRES.

Judges—Samuel Allen, D. A. Bulkley, John Dick, John Baloom.

William Watson, West Farms, N. Y., for the best bull. Silver cup or $25.

Thomas Allen, Pelham, N. Y., farmer to Geo. W. Thatcher, for the second best bull. Silver cup or $15.

William Watson, West Farms, N. Y., for the third best bull. Silver cup or $10.

William Watson, West Farms, N. Y., for the best yearling bull. Silver cup or $10

William Watson, West Farms, N. Y., for the best bull calf. Silver cup or $8.

William Watson, West Farms, N. Y., for the second best bull calf. Silver medal.

William Watson, West Farms, N. Y., for the best cow. Silver cup or $20.

R. R. Morris, Throg's Neck, N. Y., for the second best cow. Silver cup or $15.

William Watson, West Farms, N. Y., for the third best cow. Silver cup or $10.

William Watson, West Farms, N. Y., for the best two years old heifer. Silver cup or $15.

William Watson, West Farms, N. Y., for the best yearling heifer. Silver cup or $10.

ALDERNEYS.

Judges—Samuel Allen, D. A. Bulkley. John Dick.

Roswell L. Colt, Paterson, N. J., for the best bull. Silver cup or $25.

C. Van Winkle, Paterson, N. J., for the 2d best bull. Diploma.

Roswell L. Colt, Paterson, N. J., for the best cow. Silver cup or $20.

MILKING COWS.

Judges—Seely C. Roe, A. H. Hubbard, Henry Robinson, J. J. Scofield.

James Bathgate, Fordham, N. Y.. for the best cow, "Jeannette." Silver cup or $20.

R. R. Morris, Throg's Neck, N. Y., for the second best cow. Silver cup or $15.

R. R. Morris, Throg's Neck, N. Y., for the third best cow. Silver cup or $10.

WORKING CATTLE.

Judges—Asa B. Munn, John E. Stearns, Asa Hubbard.

Stephen Atwood, Watertown, Conn., for the best pair of working cattle. Silver cup or $20.

Lewis G. Morris, Fordham, N. Y., for the second best pair of working cattle. Silver cup or $15.

Jacob N. Blakeslee, Watertown, Conn., for the third best pair of working cattle. Silver cup or $10.

FAT CATTLE AND FAT SHEEP.

Judges—Thos. F. Devoe, H. B. Cropsey, C. Du Bois.

Knapp & Ryno, Washington Market, for the best pair of fat cattle. Silver cup or $30.

Bryan Lawrence, Centre Market, for a pair of fat cattle. Silver cup or $10.

T. C. Bartine, 236 Greenwich street, for the best fat calf. Silver cup or $8.

Knapp and Ryno, Washington Market, for the best single ox. Silver cup or $15.

Ellathan Gazley, Clinton, Dutchess Co., N. Y., for the best fat wether. Silver cup or $10.

Ellathan Gazley, Clinton, Dutchess Co., N. Y., for the 2nd best fat wether. Silver cup or $5.

Elias L. Barlow, La Grange, Dutchess Co., N. Y., for the 3rd best wether. Silver cup or $3.

Elias L. Barlow, La Grange, Dutchess Co., N. Y., for a very large and extra wether. Diploma.

LONG WOOL SHEEP.

Judges—Chas. Harrison, Wm. Wickham Mills, Jas. D. Van Vechten.

Gazley & Vale, Clinton Dutchess Co., N. Y., for the best buck. Silver cup or $10.

Elias L. Barlow, La Grange, Dutchess Co., N. Y., for the 2nd best buck. Silver medal.

John Dick, White Plains, N. Y., for the 3d best buck. Trans. Am. Institute.

Elias L. Barlow, La Grange, Dutchess Co., N. Y., for the best pair of ewes. Silver cup or $10.

Wm. Watson, West Farms, N. Y., for the 2d best pen of ewes. Silver medal.

Ellathan Gazley, Clinton, Dutchess Co., N. Y., for the 3d best pen of ewes. Trans. Am. Institute.

Elias L. Barlow, La Grange, Dutchess Co., for the best pen of buck lambs. Silver medal.

Wm. Watson, West Farms, N. Y., for the 2nd best pen of buck lambs. Trans. Am. Institute.

Wm. Watson, West Farms, N. Y., for the best pen of ewe lambs. Silver medal.

Justus C. Haviland, Chestnut Ridge, Dutchess Co., N, Y., for the 2nd best pen of ewe lambs. Trans. Am. Institute.

MIDDLE WOOL SHEEP.

Judges—Chas. Harrison, Wm. Wickham Mills, Jas. D. Van Vechten.

Lewis G. Morris, Fordham, N. Y., for the best buck. Silver cup or $10.

D. B. Haight, Dover Plains, N. Y., for the 2nd best buck. Silver medal.

Isaac McGraw, Washington, Dutchess Co., N. Y., for the 3d best buck. Trans. Am. Institute.

D. B. Haight, Dover Plains, N. Y., for the best pen of ewes. Silver cup or $10.

Lewis G. Morris, Fordham, N. Y., for the 2nd best pen of ewes. Silver medal.

E. Wait, Montgomery, Orange Co., N. Y., for the 3d best pen of ewes. Trans. Am. Institute,

D. B. Haight, Dover Plains, N. Y., for the best pen of buck lambs. Silver medal.

Lewis G. Morris, Fordham, N. Y., for the 2d best pen of buck lambs. Trans. Am. Institute.

D. B. Haight, Dover Plains, N. Y., for the best pen of ewe lambs. Silver medal.

Geo. Hartshorn, Rahway, N. J., for the second best pen of ewe lambs. Trans. Am. Institute.

George Coffin, Amenia, Dutchess Co., N. Y., for a buck lamb. Diploma.

Ellathan Gazley, Clinton, Dutchess Co., N. Y., for a pen of ewe lambs (cross between long and middle wool). Diploma.

SAXON SHEEP.

Judges—Chas Wright, Henry M. Swift, Robert G. Coffin.

Samuel E. Russell, Pine Plains, N. Y., for the best buck. Silver cup or $10.

Samuel E. Russell, Pine Plains, N. Y., for the 2nd best buck. Silver medal.

Walter Wakeman, North East, Dutchess Co., for the best pen of ewes. Silver cup or $10.

Samuel E. Russell, Pine Plains, N. Y., for the best pen of buck lambs. Silver medal.

Wm. Shelden, North East, Dutchess county, N. Y., for the best ewe lambs. Silver medal.

Samuel E. Russell, Pine Plains, N. Y., for the second best ewe lambs. Trans. Am. Institute.

MERINO SHEEP.

Judges—Charles Wright, Henry M. Swift, Robert G. Coffin.

Geo. R. Winchell, Dutchess county, N. Y., for a merino buck. Silver medal.

Walter Wakeman, North East, Dutchess county, N. Y., for the best pen of ewes. Silver cup or $10.

Jacob C. Haight, Washington, Dutchess county, N. Y., for the best pen of buck lambs. Silver medal.

Walter Wakeman, North East, Dutchess county, N. Y., for the best pen of ewe lambs. Silver medal.

SHEPHERD'S DOG.

Judges—Bryan Lawrence, T. Bigelow, John A. Pool, F. W. Geissenhainer, Jr.

George Buckland, for the best shepherd's dog. Trans. Am. Institute.

SWINE.

Judges—Samuel G. Striker, John De Mott Bergen, Peter H. Brink, Joseph H. Baldwin, Cornelius Van Winkle.

Thomas Richardson, West Farms, N. Y., for the best boar over two years old. Silver cup or $10.

Samuel Brewer, 132nd street and 8th avenue, for the second best boar over two years old. Silver medal.

Samuel Love, 71 53rd street, for the third best boar over two years old. Trans. Am. Institute.

Samuel Love, 71 53rd street, for the best boar over one year old. Silver cup or $8.

Samuel Brewer, 132nd street and 8th avénue, for the second best boar one year old. Silver medal.

Garrett W. Van Ness, Morris county, N. J., for the third best boar over one year old. Trans. Am. Institute.

Samuel Love, 71 53rd street, for the best sow over two years old. Silver cup or $10.

Samuel Love, 71 53rd steet, for the second best sow over two years old. Silver medal.

Samuel Brewer, 132nd street and 8th avenue, for the best sow over one year old. Silver cup or $8.

Samuel Brewer, 132nd street and 8th avenue, for the second best sow over one year old. Silver medal.

Samuel Brewer, 132nd street and 8th avenue, for the third best sow over one year old. Trans. Am. Institute.

Samuel Brewer, 132nd street and 8th avenue, for the best lot of pigs. Silver cup or $10.

Samuel Love, 71 52rd street, for the second best lot of pigs. Silver medal.

William Love, 71 73rd street, for the third best lot of pigs. Trans. Am. Institute.

Samuel Love, 71 53rd street, for the best fat hog over 600 lbs. Silver cup or $10.

POULTRY.

Judges—Wm. L. Lang, Warren Mitchell.

H. Johnson, Paterson, N. J., for the best and greatest variety of poultry. Silver cup or $8.

Daniel B. Haight, Dover Plains, N. Y., for the best pair of turkeys. American Poulterer's Companion.

H. Johnson, Paterson, N. J., for the best pair of Bremen geese. American Poulterer's Companion.

Henry Faile, West Farms, N. Y., for the best pair of mongrel geese. American Poulterer's Companion.

Edward Cooper, West Chester, N. Y., for the best pair of tame geese. American Poulterer's Companion.

H. Johnson, Paterson, N. J., for the best pair of Muscovy ducks. Am. Poultry Yard.

Roswell L. Colt, Paterson, N. J., for the best pair of common ducks. American Poultry Yard.

B. & C. S. Haines, Elizabethtown, N. J., for a fine exhibition of fowls. Diploma.

N. P. Anderson, Blackwell's Island, for the best black Shanghae fowls. American Poultry Book.

Samuel Faile, West Farms, N. Y., for the best Dorking fowls. American Poultry Yard.

David Lane, 147 10th street, N. Y., for the best Bucks county fowls. American Poultry Yard.

John T. Andrews, West Cornwall, Conn., for the best collection of Chittegong fowls. American Poultry Book.

J. W. Platt, Rhinebeck, N. Y., for the best Poland fowls. Am. Poultry Book.

John T. Andrews, West Cornwall, Conn., for the best collection of native fowls. Am. Poultry Yard.

Edward Cooper, West Chester, N. Y., for the best exhibition of pigeons. Am. Poultry Book.

E. C. Sedgwick, Brooklyn, L. I., for a superior coop of Leghorn fowls. Am. Poultry Book.

PREMIUMS

Awarded by the Managers of the twenty-sixth Annual Fair of the American Institute, October 1853.

AGRICULTURAL AND HORTICULTURAL DEPARTMENT.

FARMS AND MARKET GARDENS.

Judges—Nicholas Wyckoff, Thos. Bell, Jas. De Peyster, Alanson Nash, David Banks.

William Watson, West Farms, N Y, for the best farm of 100 acres, silver cup or $50.

Chas Dennison, West Farms, N Y, for a well-managed grass farm, diploma.

Asher H Hubbard, Flatlands, L I, for the best farm of 50 acres, silver cup or $10.

William Baity, Morrisiania, N Y, for the best market garden, silver cup or $20.

Henry Kenzie, Newtown, L I, for the 2nd best market garden, silver cup or $15.

WOOL.

Judges—John F Green, R Grant.

Isaac Merritt, Hartsville, Dutchess Co, N Y, for the best ten fleeces of wool, silver cup or $10.

AGRICULTURAL PRODUCTIONS.

Judges—Nicholas Wyckoff, Cornelius Burlew, D K Sherwood.

Joseph A Perry, Cedar Lawn, New Utrecht, L I, Nicholas Hally, gardiner, for the best and greatest variety of Indian corn, silver cup or $8.

Azariah Conover, Middletown, Monmouth Co, N J, for the best forty ears of white Indian corn, silver medal.

Alfred Williamson, English Neighborhood, N J, for the second best forty ears of white Indian corn, Farmer's Encyclopedia.

Azariah Conover, Middletown, Monmouth Co, N J, for the best forty ears of yellow Indian corn, silver medal.

Eli Ferry, Spuyten Duyvil Creek, Westchester Co, N Y, for the second best forty ears of yellow corn, Farmer's Encyclopedia.

Roswell L Colt, Paterson, N J, James Scanlen, gardener, for the best forty ears of sweet corn, 4 vols. of the Working Farmer.

Levi Wolvin, Italy, Yates Co, N Y, Hecker & Brother, 201 Cherry-street, agents, for the best bushel of wheat, silver cup or $8.

Ebenezer Sherman, Searsville, Orange Co, N Y, for the 2d best bushel of wheat, silver medal.

Ebenezer Sherman, Searsville, Orange Co, N Y, for the best bushel of rye, silver medal.

Solomon D. Crispell, Hurley, Ulster Co, N Y, for the 2nd best bushel of rye, 4 vols of the Working Farmer.

George Nesbit, Delaware Co, N Y, for the best bushel of oats, silver medal.

Solomon D Crispell, Hurley, Ulster Co, N Y, for the second best bushel of oats, Stephen's Book of the Farm.

Ebenezer Sherman, Searsville, Orange Co, N Y, for the best bushel of buckwheat, Colman's European Agriculture.

Solomon D Crispell, Hurley, Ulster Co, N Y, for the 2nd best bushel of buckwheat, Allen's American Farm Book.

Discretionary.

A M Cole, Jerusalem, Yates Co, N Y, for very superior wheat, silver medal.

Samuel L Thompson, Setauket, L I, for a valuable display of wheat and rye on the straw, Farmer's Dictionary.

J L Davis, New-York, for an improved method of branning wheat, Webster's Encyclopedia of Domestic Economy.

Thos Shillingsford, Clinton, N J, for superior white flint corn, Allen's American Farm Book.

FLOUR AND MEAL.

Judges—Edward Cromwell, A B Haner, John Romer.

Hecker & Brother, 201 Cherry-street, for the best barrel of wheat flour, silver cup or $8.

Welch, Legg & Co, Winchester, Virginia, for the second best bbl. of wheat flour, silver medal.

C J Hill & Son, Rochester, N Y, for the third best bbl. of flour, Colman's European Agriculture.

W & E Thomas, Milford, Hunterdon Co, N J, for the best bbl. of kiln-dried meal, silver cup or $8.

Discretionary.

Hecker & Brother, 201 Cherry-street, for superior improved self-raising flour, (Fowler's Patent,) a gold medal having before been awarded, diploma.

Quinby & Co, 177 Spring-street, for a sample of prepared flour, diploma.

Hecker & Brother, 201 Cherry-street, for superior farina, a silver medal having been before awarded, diploma.

PRODUCTS OF THE DAIRY.—BUTTER.

Judges—Jesse K. Weeks, Chas. M. Carpenter, Peter B. Mead.

Jas S Hopkins, Goshen, Orange county, N Y, for the best butter, silver cup or $10.

Samuel Pelton, Chester, Orange county, N. Y, for the 2d best butter, silver medal.

Richard S Denton, Vernon, N J, for the 3d best butter, 4 vols. of the Working Farmer.

CHEESE.

Judges—Jesse K. Weeks, Aaron Carpenter.

John H Carswell, Exeter, Otsego county, N Y, Osborn, Turnbull & Co., agents, 6 Bridge street, for the best specimen of cheese, silver medal.

A & J Cole, Fairfield, Herkimer county, N Y, Osborn, Turnbull & Co., agents, 6 Bridge street, for the 2d best specimen of cheese, Farmer's Encyclopedia.

Discretionary.

J Lawrence Brewster, Goshen, Conn., for fine pine apple cheese, silver medal.

FRUITS.

Judges—William S Carpenter, Peter B Mead, Thos Hogg, Jr.

Messrs. Hovey, Boston, Mass., for the choicest and greatest variety of named fruit, silver cup or $15.

John W Bailey, Plattsburgh, N Y, for the greatest number of choice named apples, silver cup or $8.

William A Underhill, Croton Point, N Y, for the best table apples, Downing's Fruits.

John Brill, Newark, N J, for the greatest number of choice named pears, silver cup or $8.

Thomas W Field, Division Avenue, Bushwick, L I, for the best table pears, Barry's Fruit Garden.

Solomon Hesdre, 153 Spring street, for the best winter pears, Cole's Fruit Book.

Wm A Underhill, Croton Point, N Y, for the best 24 quinces, silver medal.

R T Underhill, Croton Point, N Y, for the second best quinces, Barry's Fruit Garden.

Roswell L. Colt, Paterson, N J, James Scanlen, gardener, for the third best quinces, Thomas's Fruit Culturist.

GRAPES.

Judges—William Chorlton, Alexander Gordon, William Cranstoun.

Theodore Fowler, East Fishkill, N Y, for the best Isabella grapes, silver medal.

Charles W Grant, Iona Island, Hudson river, for the second best Isabella grapes, four numbers of Hovey's Fruits.

John Cole, Rossville, Staten Island, for the third best Isabella grapes, Chorlton's Cold Grapery.

Charles W Grant, Iona Island, Hudson river, for the best Catawba grapes, silver medal.

Roswell L Colt, Paterson, N J, James Scanlen, gardener, for the best foreign grapes, silver medal.

Discretionary.

Isaac Merritt, Hartsville, Dutchess county, N Y, for extra large Isabella grapes, Cole's Fruit Book.

R T Underhill, Croton Point, N Y, for the best display of native grapes, silver medal.

William A Underhill, Croton Point, N Y, for superior Isabella grapes, Chorlton's Cold Grapery.

Messrs. Hovey, Boston, Mass., for the Diana grape, as the best native grape other than the Isabella and Catawba, silver medal.

FLOWERS—SPECIAL EXHIBITION.

Judges—Daniel Boll, H R Ball, J B Lenoir.

Mateo Donadi, Astoria, L I, for the best 24 named dahlias, silver medal.

Garret H Stryker, 52d street, 11th avenue, N Y, for the second best 24 named dahlias, Boudoir Botany.

John Noble, gardener to George W Thatcher, Pelham, Westchester county, N Y, for the third best 24 named dahlias, Parson's Rose Manual.

Charles Moré, 98th street, 3d avenue, N Y, for the best 20 named roses, silver medal.

Mateo Donadi, Astoria, L I, for the second best 20 named roses, Boudoir Botany.

W & J Park, Amity street, Brooklyn, L I, for the best pair of hand bouquets, silver medal.

John Cranstoun, Hoboken, N J, for the second best pair of hand bouquets, Boudoir Botany.

Mrs. Archibald Henderson, Brooklyn, L I, for the best floral basket, silver medal.

John Cranstoun, Hoboken, N J, for the second best floral basket, Boudoir Botany.

John Noble, gardener to George W. Thatcher, Pelham, Westchester Co.. N Y, for the best six American seedling dahlias, silver medal.

Mateo Donadi, Astoria, L I, for the best six American seedling roses, silver medal.

Thomas Cavanagh, Bedford, L I, for a superb floral basket, Boudoir Botany.

FLOWERS—GENERAL DISPLAY.

Peter B Mead, Wm S Carpenter, Clarkson Crolius.

Mateo Donadi, Astoria, L I, for the largest and best display of dahlias, silver cup or $15.

Archibald Henderson, Brooklyn, L I, for a large and fine display of dahlias, silver cup or $10.

Charles Moré, Third Avenue and 79th-street, for a pretty display of dahlias, silver medal.

Mateo Donadi, Astoria, L I, for the largest and best display of roses and cut flowers, silver cup or $8.

Charles Moré, Third Avenue and 79th-street, for a fine show of roses and cut flowers, silver medal.

Mrs. A. Henderson, Bedford, L I, for the best display of bouquets, silver cup or $8.

John Cranstoun, Castle Point, Hoboken, N. J., for a beautiful display of bouquets, silver medal.

John Cranstoun, Castle Point, Hoboken, N J, for the best and most beautifully arranged flower basket, silver cup or $8.

Thomas Cavanagh, Gates and Grand Avenue, Brooklyn, for a beautiful flower basket, silver medal.

Archibald Henderson, Brooklyn, L I, for the best basket of wild flowers, Boudoir Botany.

John Cranstoun, Castle Point, Hoboken, N J, for a pretty basket of wild flowers, Parsons' Rose Manual.

Archibald Henderson Brooklyn, L. I., for the best floral design, silver cup or $10.

John Cranstoun, Castle Point, Hoboken, N. J., for a pretty floral design, silver cup or $8.

Henry R. Ball, Brookwood, S. I., for a beautiful flower stand, silver medal.

Wm. Perry, York House, Nyack, N Y, for a fine lemon tree, Trans. Am. Institute.

Mrs. P. Rowe, 282 22d-street, for a beautiful orange tree, Parsons' Rose Manual.

Messrs. Hovey, Boston, Mass., for three pretty amaranth bouquets, Trans. Am. Institute.

VEGETABLES.

Judges.—Peter B. Mead, David Clarke, Archibald Henderson.

H C Murphy, Owl's Head, New Utrecht, L I, Patrick Condon, gardener, for the choicest assortment of culinary vegetables, silver cup or $8.

Joseph A Perry, Cedar Lawn, New Utrecht, L I, Nicholas Hally, gardener, for the second best display of culinary vegetables, silver medal.

Joseph A. Perry, Cedar Lawn, New Utrecht, L. I., Nicholas Hally, gardener, for the best vegetable roots for cattle, silver cup or $8.

Henry Delafield, 79th-street, Third Avenue, N Y, Thomas Martin, gardener, for the best 12 long blood beets, Bridgeman's Gardener's Assistant.

Joseph A Perry, Cedar Lawn, New Utrecht, L I, Nicholas Hally, gardener, for the best 12 turnip-rooted beets, 2 vols. Working Farmer.

H C Murphy, Owl's Head, New Utrecht, L I, Patrick Condon, gardener, for the best 12 sugar beets, Browne's Muck Book.

Joseph A Perry, Cedar Lawn, New Utrecht, L I, Nicholas Hally, gardener, for the best 12 mangel wurtzel beets, 2 vols. Working Farmer.

H C Murphy, Owl's Head, New Utrecht, L I, Patrick Condon, gardener, for the best 6 heads of cabbage, Brown's Muck Book.

John Brill, Newark, N J, for the best 12 carrots, Working Farmer.

Jacob Amer, Bloomingdale, N Y, for the best parsnips for the table, Trans. Am. Institute.

H C Murphy, Owl's Head, New Utrecht, L I, Patrick Condon, gardener, for the best parsnips for cattle, Trans. State Ag. Society.

Jacob Amer, Bloomingdale, N Y, for the best 12 stalks celery, Farmer's Dictionary.

Joseph A Perry, Cedar Lawn, New Utrecht, L I, Nicholas Hally, gardener, for the best 6 egg plants, Brown's Muck Book.

Ebenezer Sherman, Searsville, Orange County, N Y, for the best peck of seedling potatoes, Stephens' Book of the Farm.

Joseph A. Perry, Cedar Lawn, New Utrecht, L I, Nicholas Hally, gardener, for the best peck of potatoes for the table, Farmer's Dictionary.

Ebenezer Sherman, Searsville, Orange Co., N Y, for the second best peck of potatoes for the table, Farmer's Dictionary.

Warren W. Averill, Pomfret Landing, Conn., for the best potatoes for cattle, Farmer's Dictionary.

Henry Delafield, 79th-street, Third Avenue, Thomas Martin, gardener, for the second best potatoes for cattle, Buel's Farmer's Companion.

John Brill, Newark, N J, for the best crook-neck squashes, Working Farmer.

Brewster H Smith, Newtown, L I, for the best and largest squash, Blake's Agriculture.

John Brill, Newark, N J, for the best white turnips, Bridgeman's Gardener's Assistant.

John Brill, Newark, N J, for the best yellow turnips, Buist's Kitchen Gardener.

Discretionary.

Roswell L Colt, Paterson, N J, James Scanlen, gardener, for a good display of vegetables, Trans State Agri Society.

John Brill, Newark, N J, for an extra fine half-long blood beets, Trans Am Institute.

John Brill, Newark, N J, for fine Chinese radishes, Trans State Agri Society.

Henry Delafield, 79th-st, Third avenue, N Y, for very fine crook-neck squashes, Buist's Kitchen Garden.

Wallingford Association, Wallingford, Conn, for fine sweet potatoes, Trans Am Institute.

Oneida Community, Madison co, N Y, for superior white kidney potatoes, Trans Am Institute.

Henry Gould, Monmouth co, N J, for the best and largest pumpkin, Blake's Farmer's Every Day Book.

A P & J P Wyman, West Cambridge, Mass, for the best six heads of cauliflower, Farmer's Dictionary.

M M Pettit, Rockaway, L I, for the best white onions, Bridgeman's Gardener's Assistant.

MISCELLANEOUS ARTICLES.

Judges—Peter B Mead, Wm S Carpenter, Clarkson Crolius.

Thos R Porter, Mattewan Point, N J, for very fine tomato figs, Mrs Beecher's Receipt Book.

Shaker's Society, South Groton, Mass, for fine tomato catsup and flour of pumpkin, diploma.

McIlvane & Orr, John-street, for pretty flower baskets and vases, diploma.

Robt Burnet, 181 Third avenue, for the best wire work, silver medal.

J R Kincaid, 58 Greenwich avenue, for the second best wire work, diploma.

A E Lyman, Williamsburgh, Mass, for an improved garden rake, diploma.

Aaron N Thompson & Co, 208 Fulton street, for very fine oatmeal, diploma.

D A Buckley, Williamstown, Mass, for a valuable collection of beans, (172 varieties,) Trans Am Institute.

James Curtis, Blooming Grove, Orange co, N Y, for the best specimen of honey, Miner's Bee Manual.

Curtis Coe, Springport, Cayuga co, N Y, for very fine honey with improved boxes, Trans Am Institute.

D S Raymond, Danbury, Conn, for a good light wine, diploma.

Mrs Mary A Grover, New Brunswick, N J, for good raspberry and blackberry syrup, Mrs Beecher's Receipt Book.

Mrs F A Brewster, Hampton, Conn, for a fine loaf of soda bread, Mrs Beecher's Receipt Book.

FRUITS OF AMERICA.

C M Hovey, Boston, Mass, for his illustrated work, The Fruits of America, silver medal.

AGRICULTURAL IMPLEMENTS.

Judges—Nicholas Wyckoff, William Bigelow.

R L Allen, 191 Water-street, for the best and greatest variety of agricultural implements on exhibition, a gold medal having been before awarded, diploma.

Howard, Williams & Co, Buffalo, N Y, for the best mowing machine, a gold medal having been before awarded, diploma.

Nathan Cole, Little Falls, Herkimer co, N Y, for the best cheese press, silver medal.

Almeron McKenny, Clarksfield, Ohio, for a cheese press, diploma.

Matthias Soverel, Orange, N J, for the best farm gate, diploma.

Mayher & Co, 197 Water-street, for the best hay cutter, silver medal.

Frederick Deming, Farmington, Conn, for the best ox yoke, diploma.

E Robinson, Green Castle, Pa, for the best corn sheller and vegetable grinder combined, silver medal.

Wm. Reading, Flemington, N J, for the best power corn sheller, silver medal.

Mayher & Co, 197 Water-street, for the best hand power corn sheller, silver medal.

Horace G Johnson, Hartford, Conn, for the best churn, silver medal.

J E Tillinghast, Point Harmer, Washington co, Ohio, for the second best churn, diploma.

J B Wickersham, 312 Broadway, for the best wire fence, a gold medal having been before awarded, diploma.

J A Wagener, Pultney, Steuben co, N Y, for the best clover and timothy seed harvester, silver medal.

C K Brinckerhoff, Batavia, Genesee co, N Y, for a self-holding furrow guage plow, diploma.

PLOWING MATCH.

Judges—Nicholas Wyckoff, John M. Ferrier, Lawrence Reeves.

Joseph Swannell, New-York, for the best plowing. Silver cup or $15.

Bernard Larzelere, Fort Hamilton, L. I., for 2d best plowing. Silver cup or $15.

Asa B Munn, Orange, N J, for the 3d best plowing. Silver medal.

SPADING MATCH.

Judges—Alanson Nash, Wm Bergen, Saml G Stryker, Thomas Williams, jr., J S Skinner.

Wm Brittain, Flatbush, L I, for the best spading. Silver cup or $10.

John Dinning, Flatbush, L I, for the 2d best spading. Silver cup or $8.

Patrick Fitzsimmons, Flatbush, L I, for the 3d best spading. Silver medal.

MANUFACTURING AND MECHANICAL DEPARTMENT.

BELLS.

Jones & Hitchcock, Troy, George H Swords, agent 40 Dey-st., for a superior chime of bells. Gold medal.

Andrew Meneely's Sons, West Troy, N Y, Hitchcock & Co, agents, 116 Broadway, for superior church and ship bells. Gold medal.

BLANK BOOKS AND BOOK BINDING.

Judges—Edwd G Taylor, Danl McLeod, P Hogan.

John C Beale, 78 Wall-street, for the best blank books. Silver medal.

Collins, Bowne & Co., 174 Pearl-street, for blank books. Diploma.

Francis & Loutrel, 77 Maiden Lane, for blank books. Diploma.

Fancis Munson, New-Haven, Conn., for the best printed book binding. Diploma.

BOATS AND OARS.

Judges—Albert B Sutton, Henry S Brush, R Fish.

David Blair, 239 William-street, for the best boat. Silver medal.

G. W. Jones, Atlantic Dock, Brooklyn, L I, for a 19 feet working boat. Diploma.

Ezekiel Page, 20 West-street, for the best oars and skulls. A silver medal having been before awarded. Diploma.

Benjamin Haskell, Brooklyn, L I, for a pair of skulls. Diploma.

GENTLEMENS' BOOTS AND SHOES.

Judges—P S Underhill, N A Rogers.

John Ready, 127 Nassau-street, for the best boots. A silver medal having been before awarded. Diploma.

L E Johnson, 53 Ferry-street, for the best boot and shoe lasts. Diploma.

Minor's work.

Alexander F Danberger, 53 Ferry-street, for the best boot and shoe stretchers. Webster's Dictionary.

LADIES' BOOTS AND SHOES.

Judges—Chas Middletown, A S Rogers.

Benjamin Shaw, 73 Canal-street, for the best boots and shoes. A gold medal having been before awarded. Diploma.

H B Jones, 421 Broadway, for ladies' boots and shoes. Silver medal.

BRUSHES.

Stephen Thiercelin, 27 Lispenard-street, for the best paint brushes. Silver medal.

Charles Bœckh, 453 Pearl-street, for specimens of paint brushes. Diploma.

Thomas T Steer & Co., 250 Pearl-street, for specimens of paint brushes. Diploma.

J N Parker, 506 Pearl-street, for a superior assortment of jewelers and silversmith's brushes. Diploma.

Freeman Murrow, Williamsburgh, L I, for patent whitewash and other brushes. Silver madel.

Porter & Fairchild, 415 Hudson-street, for fancy brushes. Diploma.

Steele & Co., 305 Pearl and 53 Nassau-street, for patent ostrich feather brushes. A gold medal having been before awarded. Diploma.

CABINET WARE.

Judges—J C Baldwin, E W Hutchings, G Ponsot.

Isaac Duryee, 287 Cherry-street, for specimens of American red cedar. A silver medal having been before awarded. Diploma.

Allen & Decker, Beverley, Mass., E W Hutchings, agent, 475 Broadway, for an extension dining table. Silver medal.

John H Frazer, 144 Chambers-street, for beautiful show cases. Silver medal.

Mathews & Stacy, 526 Broadway, for the best set of enameled furniture, silver medal.

S H Warwick, 62 White street, for a set of enameled furniture, diploma.

Briggs & Vickere, 165 and 167 Christie street, for a set of enamelled furniture, diploma.

William Simpson, 89 Bowery, for a rosewood sofa, silver medal.

J B Cook, 66 Broad street, for a self rocking cradle, diploma.

Christophe Volkert, 93 Elm street, for a beautiful specimen of inlaying wood, a silver medal having been before awarded, diploma.

CARPETING AND OIL CLOTH.

New England Worsted Co., Troy, N Y, Hastings & Plimpton, agents, 8 South William street, for superior velvet and Brussels tapestry carpets, gold medal.

A H Smith, Sing Sing, N Y, Hastiugs & Plimpton, agents, 5 South William street, for Chenille rug, silver medal.

H. G Law & Bro., Williamsburgh, L I, for fancy Manilla mats and cocoa matting, diploma.

Dolphin Mills, Paterson, N J, Hastings & Plimpton, agents, 5 South William street, for hemp carpeting, diploma.

CARRIAGES AND SLEIGHS.

Judges—Isaac Ford, John C Parker, Isaac Mix, Jr.

James Flynn, Eightieth street and Broadway, for the best top-buggy, gold medal.

R McKinstry, No. 450 Broadway, for a top-buggy, silver medal.

Wood, Tomlinson & Co., No. 410 Broadway, for a good two-seat wagon, diploma.

Bradley & Woodruff, Rahway, N J, for Hubbard's patent springs, a gold medal having been before awarded, diploma.

Hermance & Brigham, Kingston, N Y, for a shell sleigh, silver medal.

John Petrie, 50th street and 3d avenue, for a child's carriage, diploma.

J S & E A Abbott, Concord, N H, for an express wagon, diploma.

Alfred W Doty, Windham Centre, N Y, for a fancy buggy, silver medal.

CARVING.

J De Zouche, Troy, N Y, for the workmanship on an ecclesiastical alms dish and cover, diploma.

CASTINGS.

Judges—N M Stratton, Lewis S Dodd.

James L Jackson, 313 and 315 Stanton street, for the best iron Corinthian columns and capitals, gold medal.

Philip Muller, 347 Sixth avenue, for the best bronze figures, gold medal.

Jules Leroux, 83 Duane street, for bronze candlesticks, silver medal.

A Leconte, corner Reade and Centre streets, for best bronzed statuettes, galvanized, diploma.

Philip Shwickhardt, Williamsburgh, L I, for best bronze castings from nature, a gold medal having been before awarded, diploma.

CLOAKS.

H D Hawkins, 327 Grand street, for an embroidered cloak, diploma.

COMBS AND MOROCCO GOODS.

Judges—W H Coles, George R Cholwell.

S C Noyes & Co, West Newbury, Mass., Noyes & Bailey, agents, 12 Cedar street, for superior dressing combs, diploma.

George W Tuttle, 345 Broadway, for elegant morocco reticules, silver medal.

COOPERS' WORK.

Judges—Hugh Aikman, Francis O'Brien, J Mc J Bensell.

George Brownridge, 334 Spring street, for workmanship on a butter churn, diploma.

John Reed, Greenpoint, L I, for workmanship on a cedar pail, diploma.

J & J G Keys, 91 and 93 Suffolk street, for a five-gallon keg, diploma.

Minor's Work.

Michael Conley, 67 Frankfort street, N Y, for a wooden bound cedar pail, Webster's Dictionary.

COTTON GOODS.

Judges—Haynes Lord, Benjamin Salter, Jr.

New-York Mills, Oneida county, N Y, Charles Carville, agent, 17 Broad street, for the best bleached shirtings, a gold medal having been before awarded, diploma.

Wamsutta Mills, New Bedford, Mass., Willard & Wood, agents, 40 and 42 Broad street, for fine specimens of bleached shirtings, silver medal.

Masonville Co., Providence, R I, Lawrence, Clapp & Co., agents, 35 Broad street, for bleached shirtings, diploma.

J J Kilton, Coventry, R I, Lord, Warren & Co., agents, 46 Broad street, for superior brown shirtings, silver medal.

A & W Sprague, Providence, R I, Hoyt, Tillinghast & Co, agents, 63 Broadway, for the best prints. A gold medal having been before awarded; diploma.

Globe Works, Fall River, Mass, McUrdy, Aldrich & Spencer, agents, 65 Broadway, for prints, diploma.

Malcolm & Hesketh, Paterson, N J, for bleached quilts, diploma.

N G B Dexter, Pawtucket, R I, Lane & Gould, agents, 57 Cedar-street, for tidy knitting and darning cotton, diploma.

Glasgow Co., South Hadley Falls, Mass., Atwater, Knapp & Co, agents, 43 Broad street, for beautiful specimens of ginghams, silver medal.

F H Rathbone, Chatham Four-Corners, Moorehouse & Merritt, agents, 34½ Pine street, for very superior cotton wadding, diploma.

B S Walcott, New-York Mills, Oneida Co, N Y, Macy, Smith & Huselhurst, agents, 31 Broad street, for fancy cottonades, silver medal.

Boston Duck Co., Palmer, Mass., Geo Wellman Wright, agent, 30 Broadway, for superior cotton sail duck, gold medal.

DAGUERREOTYPES.

Judges—Augustus Morand, John Roach, A H Ritchie.

Meade Brothers, 233 Broadway, for the best double whole-plate single and half-plate pictures, gold medal.

J Gurney, 349 Broadway, for the best whole-plate single picture, a gold medal having been before awarded, diploma.

Carden & Co., 293 Broadway, for daguerreotypes, diploma.

DENTISTRY.

Judges—F H Clark, George Clay, J Parmly.

J G Ambler, 31 Washington Place, for the best detal mechanism, a gold medal having been before awarded, diploma.

H C Grant, Lima, Livingston county, N Y, for the finish on the studs on a set of teeth, diploma.

J G Ambler, Honesdale, Pa., for instruments used for forming plates, diploma.

DIES AND CHASING.

Judge—W H Bridgens.

L T Boland, 178 Fulton street, for the best crest and coat of arms, a silver medal having been before awarded, diploma.

William M Tompson, 169 William street, for a very superior illuminated stamp for book binders, a gold medal having been before awarded, diploma.

DRUGS AND CHEMICALS.

Judges—Isaiah Deck, Thomas Antisell, John H Currie.

Jos Lombard, 210 West 42d street, for the best macaroni and vermicelli, diploma.

Belling & Vogle, 217 Walker street, for macaroni and vermicelli, diploma.

Wm M Giles, 189 Sixth avenue, for the best flavoring extracts and baking powders, silver medal.

Beck & Co., Boston, Mass., for cooking extracts, diploma.

J M Davidson, 56 Frankfort street, for adhesive plaster, diploma.

Chas Patch, New Brunswick, N J, E Snyder, agent, 303 Broadway, for mineral paint, diploma.

Blatchford & Co., A M Abbatt, agent, 29 Burling slip, for preserved milk, diploma.

Withington & Wilde, 7 Dutch street, for the best mustard, diploma.

J L Labiaux, 1,181 Broadway, for imitation French mustard, diploma.

S Wright & Son, Philadelphia, John Wright, agent, 123 24th street, for superior specimens of oiled silk, silver medal.

Nichols & Smith, 156 Front street, for samples of paint, diploma.

Wm Colgate & Co., 4, 6 and 8 Dutch street, for Indian corn starch, diploma.

Thomas Manson, 20 Eighth avenue, for Jenny Lind tooth paste, diploma.

Glenn Putman, 85 Liberty street, for cotton safety fuse for blasting, silver medal.

Joseph Dixon, Jersey city, N J, for black lead crucibles and assay furnaces, silver medal.

Phœnix Mining Co, Taunton, Mass., G H Swords, agent, 40 Dey street, for black lead crucibles, diploma.

Leo S Root & Co, 8 Dey street, for Paris green, a rich color and well ground, silver medal.

F Ramppen, corner of Court and Dean streets, Brooklyn, L I, for pearl starch, diploma.

Nelson Spencer, Rochester, N Y, for American polishing powder, diploma.

John Van De Venter, 87 Barclay street, for superior paste blacking, a silver medal having been before awarded, diploma.

Thaddeus Davids, 26 Cliff street, for superior sealing wax, copying and writing ink, silver medal.

New-York Ink Co., C M Saxton, agent, 152 Fulton street, for good ink and writing fluid, diploma.

Withington & Wilde, 7 Dutch street, for drugs and powdered spices, diploma.

James Escalonne, 308 Atlantic street, Brooklyn, L I, for cologne water, perfumes, erasive soap, and ink and iron-mold extractor, silver medal.

North American Paint Co, H W Monroe, agent, 37 Chambers street, for Sienna paint, diploma.

J Govearts, 376 Pearl street, for the best chocolate, cocoa, and broma, a silver medal having been before awarded, diploma.

Frederick Widdows, 138 Thompson street, for crystal cement, diploma.

W Christal, 480 Front street, for patent dryer, diploma.

J S Schofield, 127 Duane street, for crystalized oil, diploma.

Beck & Co, Boston, for the best chemical washing powders, diploma.

J Thompson, Williamsburgh, J Pyle, agent, 114 Warren street, for washing and transparent soaps, diploma.

James Pyle, 114 Warren street, for Nelson's Chinese washing fluid, diploma.

J W Kelly, N Y, J Pyle, agent, 114 Warren street, for lemon sugar and soda preparations, diploma.

Joseph Hoyt, Providence, R I, H M Bowman, agent, 79 Front street, for custard flour and family starch, diploma.

Edward Gunning, 148 Eighth avenue, for harness composition, diploma.

H A Cammus, 52 Orchard street, for cachou aromatic, diploma.

Thomas Andrews, 136 Cedar street, for the best yeast powders, sal soda, and cream of tartar, a silver medal having been before awarded, diploma.

Phœnix Manufacturing Co, Taunton, Mass, G H Swords, agent, 40 Dey street, for the best stove polish, diploma.

Quarterman & Son, 114 John street, for stove polish, diploma.

C R Durkee, 139 Water street, for baking powders, diploma.

W Wilbur & Co, New Orleans, La, for cotton seed oil and soap, silver medal.

John Fogal, Jr & Co, 82 Grand street, for vegetable soap, diploma.

Alden & Co, 314 Broadway, for cream, coffee, concentrated milk, preserved eggs, chocolate, and essence of coffee, a silver medal having been before awarded, diploma.

J T Johnson, 317 Bowery, for liquid blueing, starch polish and soap, diploma.

J T Johnson, 317 Bowery, for Stowe's chemical erasive soap, diploma.

ENGRAVING.

Judges—F C Strype, Henry W Herrick, William Howland.

A H Ritchie, 23 Chambers street, for the best engraving on steel, gold medal.

Robertson & Seibert, 121 Fulton street, for the best lithography, silver medal.

Endicott & Co, 59 Beekman street, for lithography, diploma.

A V Mills, 137 Allen street, for the best wood engraving, silver medal.

A W Francis, 93 Leonard street, for the best seal engraving, silver medal.

Thomas Pittis, 296 Pearl street, for the best stencil engraving, diploma.

Minors' Work.

D W Cammeyer, Brooklyn, L I, for the best wood engraving, Webster's Dictionary.

Durbin Van Vleck, 305 Fifth street, for wood engraving, Webster's Dictionary.

New-York School of Design for Women, for specimens of wood engraving, diploma and Webster's Dictionary.

ENAMELED IRON AND SLATE.

Judges—Jordan L. Mott, Jas L Jackson, Thomas Goadby.

Salamander Marble Co, 813 Broadway, for the best marbelized mantles and table tops, a gold medal having been before awarded, diploma.

Thomas Flaherty, 205 avenue C, for a marbelized table top, diploma.

Penrhyn Marble Co, Boston, Mass, Janes Beebe & Co, agents, 356 Broadway, for beautiful enameled slate mantles, gold medal.

Pattison & Marshall, 409 Cherry street, for superior enameled iron, silver medal.

FIRE AND BURGLAR PROOF SAFES.

Judges—Geo Tappen, jr, Stephen D Tucker, William Bellamy, James Rodgers.

World's Safe Co, Morris & Bradley, agents, 119 Pearl street, for the best fire and burglar proof safes, a gold medal having been before awarded, diploma.

R M Patrick, 192 Pearl street, for a fire and burglar proof safe, "Gaylor's Patent," silver medal.

Holmes & Butler, 122 Water street, for a fire proof safe, diploma.

FIRE ARMS.

Judges—Joseph Rose, John P Moore, Joseph Hall.

Samuel Colt, Hartford, Conn., for the best specimen of pistols of very superior workmanship. A gold medal having been before awarded. Diploma.

North & Savage, Middletown, Conn., for the best revolving rifle and shot gun. Gold medal.

FINE ARTS.

W J Hanington, 364 Broadway, for the best stained glass windows. Silver medal.

V. Leichert, 437 Fourth-street, for the best painted window shades Diploma.

Wm Robertson, 364 Broome-st, for excellent window shades. Diploma.

George Ryan, 248 Ninth Avenue, for superior marble mantle. Silver medal.

Louis Bail, 1 Bowery, for very superior crayon drawings. Silver medal.

D F Pond, Brooklyn, L I, for superior crayon drawings. Diploma.

Wm Parr, Williamsburgh, for a superior crayon drawing. Diploma.

A Morris, Stuyvesant Institute, 659 Broadway, for pastel painting. Silver medal.

Alex Vurst, Ward-school No. 11, for an Indian ink drawing. Diploma.

Henry Clews, Brooklyn, L I, for water color maps. Diploma.

Minors' work.

Miss Matilda Stephenson, East Brooklyn, L I, for a stained glass window. Webster's Dictionary.

FISHING TACKLE.

Judges—John G Bolen, P B Mead.

J & J C Conroy, 52 Fulton-street, for the best fishing rods and reels. Silver medal.

Job Johnson, East Brooklyn, L I, for the best fish hooks. A silver medal having been before awarded. Diploma.

GLASS, CHINA AND EARTHEN WARE.

Judges—Henry W. Haydock, Davis Collamore, James Neeves.

Brooklyn Flint Glass Co., 30 South William-street, for cut and colored flint glass. A gold medal having been before awarded. Diploma.

Harker, Thompson & Co., East Liverpool, Ohio, Vandewater & Hoyt, agents, 178 Washington-street, for superior Rockingham and yellow stone ware. Silver medal.

C Cartlidge & Co, Greenpoint, L I, for superior porcelain. A gold medal having been before awarded. Diploma.

C L Osborn, 486 Broadway, for glass engraved reflective door plates. Silver medal.

Alexander Young, 40th-street, between Second and Third Avenues, for terra cotta building materials. A gold medal having been before awarded. Diploma.

Hale & Co, 80 Nassau-street, for handsome glass signs and druggists' jars. A gold medal having been before awarded. Diploma.

John Snare, 659 Broadway, for specimens of gilding and enameling on glass. Diploma.

Washington Smith, 261 West 18th-street, for stone and vitrified drain pipes. Silver medal.

Brooklyn Flint Glass Co., 30 South William-street, for Gilliland's dioptric lens. Gold medal.

W H Smith, 186 Broadway, for artificial lava ware. Diploma.

GRAINING.

Judges—E Ramsbottom, John Farrington.

R Garthwaite, 143 16th-street, for the best graining. Silver medal.

Adam Smith, 446 Hudson-street, for a specimen of graining. Diploma.

Blaisdell & Griffith, 118 Wooster-street, for a portable counting house, a specimen of plain and decorative house painting. Silver medal.

GRATES.

Judges—Jordan L Mott, James L Jackson, Thomas Goadby.

W & N Jackson & Son, 238 Front-street, and 891 Broadway, for parlor grates, neat design and superior workmanship. A gold medal having been before awarded. Diploma.

HATS, CAPS AND FURS.

Judges—Charles St John, Edgar T Ryder, Nathan S Starr.

John N Genin, 214 and 513 Broadway, for the best silk and beaver hats. A silver medal having before been awarded. Diploma..

A Freeman, 90 Fulton-street, for a silk hat. Diploma.

John N Genin, 214 and 513 Broadway, for the best ladies' beaver bonnets, diploma.

John N Genin, 214 and 513 Broadway, for the best children's hats and caps, a silver medal having been before awarded, diploma.

John N Genin, 214 and 513 Broadway, for the best furs, a gold medal having been before awarded, diploma.

James H. Harley, 34 John street, for fancy furs, diploma.

Adolphus Moore, Brooklyn, L I, for fancy furs, diploma.

STRAW HATS.

Judges—T A Napier, J H Hills, D K Granger, Charles Miles.

J W Fisher, 189 Broadway, for the best fine split straw bonnets, silver medal.

G W Thayer, 93 West 28th street, for handsomely made Sicilian bonnets, diploma.

HARDWARE, EDGE TOOLS AND CUTLERY.

Judges—J Conger Berry, E L Cooper, George H Swords.

John Sharpe, L I, Thomas Douglass, agent, 5 Platt street, for chisels and gouges, silver medal.

Oliver Ames & Sons, North Easton, Mass, for the best shovels and spades, gold medal.

Old Colony Iron Co, Trenton, Mass, J L Bussing, agent, 32 Cliff street, for shovels and spades, silver medal.

Fisher & Norris, Trenton, N J, for the best anvils, with steel faces, gold medal.

Rossell & Co, Trenton, N J, Edward Corning & Co, agents, 81 John street, for anvils, silver medal.

Waterville Manufacturing Co, Waterville, N Y, F G Wheeler, agent, 25 John street, for a case of superior cutlery, a gold medal having been before awarded, diploma.

Wm Platt & Co, Waterford, N Y, for the best stocks and dies, silver medal.

J M Todd & Co, Waterford, N Y, for stocks and dies, diploma.

Wm Richards, Cincinnati, Ohio, James H Earl, agent, 193 Pearl street, for chisels with two bits, for cutting tenons, diploma.

J L Clark, Chester, Conn, Clark, Wilson & Co, agents, 13 Cliff street, for auger bits, diploma.

C H Kellogg, Troy, S T Dauchy, agent, 1 Cedar street, for spring bolts, diploma.

C Hovey, Thomas Douglass, agent, 5 Platt street, for a boring machine, diploma.

Abraham Krowl, cor. of 38th street and Eighth avenue, for horse shoes, diploma.

Samuel Fulton, corner of South Pacific street, Brooklyn, L I, for caulking irons aud scraper, diploma.

Tuttle Manufacturing Co, Naugatuck, Conn, John Bailey, agent, 48 Dey street, for solid shank goose neck hoes, a silver medal having been before awarded, diploma.

Leonard & Wendt, 29 and 31 Gold street, for superior tailors' shears, a silver medal having been before awarded, diploma.

S Newhouse, Oneida Community, N Y, Wm R Inslee, agent, Newark, N J, for otter, mink and musk-rat traps, diploma.

John Savery & Sons, 54 Cliff street, for sad and smoothing irons, diploma.

N Hayman, 57 Nassau street, for signal bells for steamers, silver medal.

James R Taylor, 273 3d street, for a mitering plane, diploma.

Joshua Terry, 273 3d street, for an iron smoothing plane, diploma.

A W Whitney, Woodstock, Vt, for a set of tinners' machines, diploma.

Carl Klauberg, jr, 88 Chatham street, for superior razors, silver medal.

A Field, Taunton, Mass, S C Hills, agent, 12 Platt street, for superior tacks, brads and shoe nails, silver medal.

James Horner & Co, for an excellent specimen of American cast steel files and rasps, silver medal.

Minor's Work.

Austin M West, Newark, N J, for a case of files, silver medal.

INDIA RUBBER BOOTS AND SHOES.

Judges—William Rider, B R Taylor, H G Norton.

New Brunswick Rubber Co, 29 Maiden Lane, for the best India rubber boots and shoes, silver medal.

Goodyear's Metallic Rubber Co, Naugautuck, Conn, J W Corlies, agent, 32 Dey street, for India rubber boots and shoes, diploma.

INDIA RUBBER GOODS.

Union India Rubber Co, 19 Nassau street, for the best metalic India rubber goods, a gold medal having been before awarded, diploma.

Wells Rubber Co, Newark, N J, W D Russell, agent, 75 Liberty street, for India rubber clothing, silver medal.

Newark India Rubber Co, 59 Maiden Lane, for India rubber whips, diploma.

LOCKS AND DOOR SPRINGS.

Judges—Geo Tappan, jr, Wm Bellamy.

A Wells, 1 Washington Market, for a barn door fastening, diploma.

M Nutting, Portland, Me, for an expanding window sash, diploma.

Hastings & Holman, 65 Chatham Square, for a balance window sash, diploma.

Geo H Swords & Co, 40 Dey street, for porcelain door furniture, diploma.

BANK LOCKS.

Judges—Geo Tappen, jr, Stephen D Tucker, Wm Bellamy, Jas Rodgers.

Lewis Lillie, Troy, N Y, Morris & Bradley, agents, 119 Pearl street, for the best bank lock, silver medal.

Linus Yale, Newport, N Y, for a bank lock, diploma.

Holmes & Butler, 122 Water street, for a bank lock, diploma.

LEATHER.

Judges—A H Kimmel, P N Griffin, George Evans, Wm Dymock.

W A Sears, 33 Spruce street, for the best sole leather, diploma.

W T McNeely, Philadelphia, Pa, for the best piano leather, silver medal.

Jas Cauthers, 266 2d street, for the best black bridle leather, and black harness leather backs, silver medal.

T Scott & Son, 2 Jacob street, for black bridle leather, diploma.

E C Ely, 31 Ferry street, for the best russet leather, diploma.

Joseph Utley, Westville, Oneida co, N Y, for the best calf skins for rollers, diploma.

W & O Hoyt, 40 Spruce street, for the best enameled leather, silver medal.

W & O Hoyt, 40 Spruce street, for the best finished calf skins, diploma.

John H Bowie & Co, 25 Ferry street, for the best hose and fire buckets, a gold medal having been before awarded, diploma.

MACHINERY, MODELS AND INVENTIONS.

Judges—Isaac W Ayres, James Bogardus, A B Taylor.

J T Foster, Jersey City, N J, for a self-loading stone picking machine, a silver medal having been before awarded, diploma.

W & B Douglas, Middletown, Ct, for a garden engine, diploma.

G Pollock & Co, 23 Centre street, for the best brass force and lift pumps, diploma.

Geo Williston & Co, Brunswick, Me, for lever jacks and a railroad iron straightener, diploma.

A C Taylor & Co, Peekskill, N Y, Bartlett Bent, jr, agent, 238 Water street, for the best portable forges, silver medal.

S T McDougall, 166 Pearl street, for platform scales, a gold medal having been before awarded, diploma.

Talman & Reynolds, Providence, R I, J H Wardell, agent, 31 Old Slip, for patent wrought horse nails, silver medal.

Domestic Annunciator and Telegraph Co, corner Broadway and Howard street, for hotel and house annunciators, a gold medal having been before awarded, diploma.

McCleary & Powis, Seneca Falls, N Y, G B Doris, agent, 95 Maiden Lane, for an iron stirrup, well-curb and engine, diploma.

Norton & Gardiner, 47 Dey street, for a magnetic ore separator, diploma.

N Dodge, 42 University Place, for a pump valve, silver medal.

Roys & Wilcox, East Berlin, Conn, for rotary shears and burring machine, gold medal.

J A Fay & Co, Keene, N H, D Jacobus, agent, 138 Wooster street, for a tenoning, sash moulding and morticing machine, a silver medal having been before awarded, diploma.

Arnold & Felton, Troy, N Y, for regulator of feed water for steam boilers, silver medal.

Wm Gee, 58 Fulton street, for the best iron pump, diploma.

Ball & Rice, Worcester, Mass, for the best planing machine, a silver medal having been before awarded, diploma.

Ball & Rice, Worcester, Mass., for a tenoning and sash moulding machine, silver medal.

Albert M Smith, Rochester, N Y, for patent machine clasps, diploma.

George Vail & Co, Morristown, N J, Logan, Vail & Co, agents, 9 Gold street, for portable steam engine, silver medal.

B Newbury, Catskill, N Y, for lifting jacks, diploma.

J J Couch, 33 Gold street, for a rock drilling machine, silver medal.

L P & W F Dodge, Newburgh, N Y, for suction and force pump, silver medal.

Spillyard & Dodge, Philadelphia, Pa, for Croton brass and plated faucets, diploma.

Sloan & Leggett, Lexington avenue and 30th street, for the hydrostat for regulating water in steam boilers, a gold medal having before been awarded, diploma.

Tremere & Warren, 211 Water-street, for portable forges, diploma.

Duryea & Forsyth, Rochester, N Y, W S Pinckney, 166 Pearl-street, agent, for a good thirty-two bushel wheat scale, diploma.

Otis & Cottle, Syracuse, N Y, for a power boring hub and morticing machine. A silver medal having been before awarded; diploma.

Mattapan Iron Co, South Boston, Mass, for iron lathes, diploma.

J & W McAdams, Boston, Mass, for a double paging machine. A gold medal having been before awarded; diploma.

F Harris & Sons, Elizabethtown, N J, S B Schenck, agent, 62 Courtland-street, for a smut and scouring machine and fan. A gold medal having been before awarded; diploma.

J Standish, Cuyahoga Falls, Ohio, for a pegging machine, diploma.

N H Man. Co, New Haven, Conn, Samuel C Hills, agent, 12 Platt-street, for a portable grist mill. A gold medal having been before awarded; diploma.

Rees & Hoyt, 37 Spruce-street, for leather machine banding. A gold medal having been before awarded; diploma.

T K Earle & Co, Worcester, Mass, Andrews & Jessup, agents, 70 Pine-st, for oak tanned machine belting, diploma.

Samuel B Schenck, Jersey City, N J, 62 Cortland-street, for leather machine belting, diploma.

Grover, Baker & Co, Boston, Mass, for the best sewing machine, gold medal.

Asa Barber, Hancock, Mass., P C Lapham & Co, agents, 12 Platt-street, for a coffee cutter, diploma.

Alfred Hall, Perth Amboy, N J, for a brick machine. A silver medal having been before awarded; diploma.

Jas. Cochrane, 8 Tenth-street, for the best hydrant, silver medal.

John J G Collins, Philadelphia, Pa, Rose, Middleton & Tifft, agents, 192 Broadway, for a duplex, eccentric and variable cut-ffo motion, silver medal.

A Tower, corner of Grand and Chrystie-streets, for a submerged force pump, silver medal.

D D Allen, Adams, Mass, for a peg cutter, diploma.

David Marsh, Bridgeport, Conn, for a vertical horse power corn mill, diploma.

T Clough, corner Franklin and Elm-streets, for bibbs, stops, basin cocks, and shampooing cocks, diploma.

Philos B Tyler, Springfield, Mass, for a patent railroad switch and mould, silver medal.

George Grant, Troy, N Y, for a hinge for moulders' flasks, diploma.

Wm. R Nevins, 87 Eldridge-street, for a rotary and perpendicular biscuit machine. A silver medal having before been awarded, diploma.

A W Metcalf, 140 Centre-street, for the best steam whistle, gauge cocks, and oil cocks, silver medal.

J Conner & Son, 29 Beekman-street, for a type casting machine, gold medal.

Stephen E Parrish, 15 Canal and 106 Elm-streets, for a floor board cramp and iron presser, diploma.

Stephen E Parrish, 15 Canal and 106 Elm-streets, E B Clayton & Sons, 161 Pearl-street, for letter presses and press stands, diploma.

O Nichols, Lowell, Mass, for a corn and cob crusher, silv. med.

E Carver & Co, East Bridgewater, Mass, for the workmanship on a cotton gin, silver medal.

Thomas Hanson, 327 Third Avenue, for an improved hydraulic ram, diploma.

J P Michaels, 316 Rivington-street, for a fanning machine, diploma.

W Russell Palmer, Williamsburgh, for a horse power, diploma.

Hughes & Philips, Newark, N J, for the steam engine used in propelling the machinery at the Fair, silver medal.

A W Whitney, Woodstock, Vt, for a folding machine, silver medal.

Samuel Down, 22d street, North River, for a dry gas meter, silver medal.

Samuel Down, 22d street, North River, for a wet meter, diploma.

Discretionary.

Patrick Clark, Rahway, N J, for the static regulator for steam boiler fires, gold medal.

Ebenezer Barrows, corner of Water and Beekman-streets, for a superior rotary engine, gold medal.

John Jones, Clyde, Wayne County, N Y, for a typographer, diploma.

Marshall Lefferts and Brother, 10 Broadway, for corrugated iron-roofing, silver medal.

MATHEMATICAL AND PHILOSOPHICAL INSTRUMENTS.

Judges—Isaiah Deck, Henry Wurtz.

G. C. Wessmann, 363 Hudson-street, for Morse's telegraph apparatus, silver medal.

B H Horn, Brooklyn, L I, for receiving-magnet for telegraph, diploma,

Henry Eason, 95 Mercer-street, for an electrotype copper mould and impression, diploma.

Jas. Rodgers, 413 Broadway, for a case of telegraph work, diploma.

Wm Norton, 40 Fulton street, Brooklyn, L I, for a case of thermometers and hydrometers, silver medal having been before awarded, diploma.

Charles Copley, 159 Atlantic street, Brooklyn, L I, for a pair of fifteen inch-globes, a gold medal having been before awarded, diploma.

Henry Fitz, 237 Fifth street, for an improved equatorial, diploma.

A Derne, 369 Pearl street, for telescopes, spy and opera glasses, a silver medal having been before awarded, diploma.

J W Gascoyne, 248 Pearl street, for ivory and boxwood rules, diploma.

G & G Holliday, Lynn, Mass., for a pentograph for drawing, diploma.

C Tagliabue, 298 Pearl street, for well made barometers and thermometers, silver medal.

S B Turner, Brooklyn, N Y, for pendulum levels, diploma.

Lambert, Mulliken & Co., Boston, S C Hills, agent, 12 Platt st, for spirit and water levels, diploma.

MECHANICAL DRAWING.

Judges—T S Shepherd, John B Snook, E W Smith.

James S Diack, 77½ Broome street, for the best mechanical drawing, silver medal.

J H Capel, Brooklyn, L I, for a mechanical drawing, diploma.

MUSICAL INSTRUMENTS.

Judges—Wm Leach Bloomfield, Warren Hill, T S Shepherd.

C G Christman, 404 Pearl street, for the best diatonic and Boehm flute, royal Kent bugle, cornet and clarionets, silver medal.

George Shaw, Thompson, Conn., for a tortoise shell bugle, diploma.

J Cohen, 80 Hudson street, for the best banjo and drums, silver medal.

Wm B Tilton & Co, 65 Chatham street, for improvements on the guitar and violin, silver medal.

ORNAMENTAL IRON GARDEN DECORATIONS.

Janes Beebe & Co., corner Reade and Centre streets, and 356 Broadway, for superior specimens of fountains, figures and vases, gold medal.

NAVAL ARCHITECTURE.

Judges—E E Morgan, Eckford Webb.

Joseph Francis, Greenpoint, L I, for a corrugated metalic life boat, a gold medal having been before awarded, diploma.

J T B Maxwell, 77 South street, for a superior made pilot boat's foresail, silver medal.

Windram & Allaire, Atlantic Dock, Brooklyn, L I, for an iron strapped block, diploma.

NEEDLE WORK, EMBROIDERY, AND FANCY ARTICLES.

Judges—Miss A A Smith, Miss M Hamilton, Mrs C M French

Mrs W S Carr, 931 Broadway, for the best fancy leather work, silver medal.

Mrs R Van Houten, for the best shirts, a silver medal having been before awarded, diploma.

Mrs Maria Way, Collamore House, Broadway, for well executed shirts, diploma.

Mariners' Friendly Industrial Society, 322 Pearl street, for shirts and drawers, diploma.

Miss Allen, Institution for the blind, 8th avenue, for the workmanship on a dress, diploma.

Mrs B Voorhees, Amsterdam, N Y, for a display of domestic manufactures, a gold medal having been before awarded, diploma.

Mrs Elizabeth Pearne, 47 Downing street, for very fine domestic linen, a silver medal having been before awarded, diploma.

Mrs Parmelia R Dean, New Lebanon Centre, N Y, for linen diaper, socks and gloves, diploma.

John M Noyes, Brooklyn, L I, for a ladies' bag, diploma.

Mrs G Schlegel, 15½ Division street, for the best millinery, silver medal.

Mrs C Stonehill, 7 Division street, for a case of millinery, diploma.

Mrs M Pollock, 1 Troy street, for a feather cape, diploma.

Patrick & Peasley, East Chatham, N Y, for a swing cradle, diploma.

John N Genin, 214 and 513 Broadway, for superior infants' clothing, a gold medal having been before awarded, diploma.

Mrs Oakley, 224 Spring street, for an embroidered counterpane, diploma.

Miss Julia J Marcet, 94 Orchard street, for an embroided child's dress, diploma.

Miss A A Chapman, 88 Fourth avenue, for wax fruit, diploma.

Miss Ann Jenkins, Columbus, Ohio, for the best raised worsted work, diploma.

Clara H Sneden, Sneden's Landing, N Y, for a raised worsted lamp mat, diploma.

Mrs G J Lee, 14 John street, for superior worsted work, diploma.

Mrs L S R Whitman, 70 Varick street, for superior worsted work, diploma.

Miss Easterbrook, Bristol, R. I., for worsted work, diploma.

Mrs. F. Seybel, 107 Eighth Avenue, for superior crochet work, diploma.

Jemima Daniels, Newark, N. J., for a scrap-table, diploma.

Mrs. Gilbert Smith, 209 Monroe-street, for an emblematic quilt, silver medal.

Miss M. E. Bunting, 44 Eighth Avenue, for the best silk quilt, diploma.

Mrs. S. H. Morgan, Chemung county, N. Y., for the best calico quilt, diploma.

Mrs. H M Phelps, Brooklyn, L I, for a quilted cradle spread, diploma.

Mrs. Edgar Spear, 11½ Prince-street, for a knit counterpane, diploma.

Mrs. Mary F. Ripley, 20 Suffolk-street, for a knit counterpane, diploma.

Mrs. Elizabeth Parr, Williamsburgh, L I, for superior wax flowers, diploma.

Miss P. M. Fonda, Troy, N Y, for superior hair flowers, diplo'a.

PAPER HANGINGS AND UPHOLSTERY.

Judges.—John M. Pratt, John N. Quirk.

John Dixon, 33 West 13th-street, for excellent curled horse hair, diploma.

A. Mellen & Co., 168½ Chatham-street, for excellent curled horse hair, diploma.

John Dixon, 33 West 13th-street, for hair cloth, diploma.

John Waters, 52 Fulton-street, Brooklyn, L I, for a handsome spring mattrass. A silver medal having been before awarded diploma.

Demeure, Mauritz & Chatain, 63 Centre-street, for an iron spring bed bottom. A silver medal having been before awarded, diploma.

Edward Cranston, Brooklyn, L I, for the best marble decorative paper, silver medal.

R. Graves, Brooklyn, L I, for marble and oak decorative paper, diploma.

Fackrell & Varney, Plainfield, N. J., for the best oak decorative paper, silver medal.

James Fackrell, Elizabethtown, N J, for superior paper hanging, in imitation of rosewood, root oak, birch, &c., silver medal.

PAPIER MACHE.

Renshaw & Hill, 44 Fulton-street, for very superior papier mache goods, gold medal.

PENMANSHIP AND GOLD PENS.

Judges.—Hiram Dixon, G H Coggeshall, W M V Williamson.

A H Wheeler, 251 Broadway, for the best specimens of plain and ornamental penmanship, silver medal.

David Stanton, 39 Hester-street, for a specimen of plain and ornamental penmanship, diploma.

Rendall & Fairchild, 132 William-street, for fine finished gold pens, silver medal.

PERFUMERY.

Judges.—Isaiah Deck, Thomas Antisell, John H Currie.

Ruth Johnson, 205 17th-street, for transparent and plain soap, diploma.

Beck & Co., Boston, Mass., for an extensive assortment of soaps, creams, and perfumery, silver medal.

Wm. Walker, 156 Cherry-street, for the best Cologne water and hair preparation, silver medal.

Ashard Brothers, 28 Abingdon Place, for Oriental crystal perfumes, silver medal.

Nathan Whitely, 131 West 18th-street, for Oriental spirit of flowers, silver medal.

PIANO FORTES.

Judges.—Theodore Eisfield, E Gottschalk, George F Root, James G. Maeder.

Lighte & Newton, 22 Canal-street, for the best piano, gold medal.

Hallett, Davis & Co, Boston, Mass., T. S. Berry, agent, 297 Broadway, for a grand piano-forte, silver medal.

PREPARATIONS OF NATURAL HISTORY.

Judges.—Isaac V. Brower, John A. Bunting.

J M Somerville, Philadelphia, Pa., for the best specimen of Algæ, silver medal.

Augustus Fitch, 278 Tenth-street, for specimens of natural history from California, silver medal.

Townend Glover, Fishkill Landing, N Y, for specimens of fish, reptiles, and fungi, in composition, silver medal.

John G. Bell, Broadway, for superior specimens of preserved birds, animals, and fish, silver medal.

SADDLERY AND HARNESS.

Judges.—John B. Bull, Robert R Story, J Jamison.

Owen McFarland, N J, for the best set of carriage harness, silver medal.

Wm. Francis, 39 Bowery, for a circus performing saddle, diploma.

Angular Hame Co., Raritan, N J, for handsomely finished hames, silver medal.

Francis Vornsheim, Williamsburgh, L I, for a fancy fly net, diploma.

SHAWLS.

Judges.—George P Lord, Wm. H Lee.

Samuel Roy & Co., Watervliet, N Y, Hoyt, Tillinghast & Co, agents, 63 Broadway, for superior long shawls, silver medal.

SIGN PAINTING.

Judges —George W Fordham, Alexander Brandon.

Minors' Work.

Edward Little, 3 Canal-Street, for an excellent specimen of sign painting, Webster's Dictionary.

James O Hover, 404 Tenth-street, for an excellent specimen of sign painting, Webster's Dictionary.

John Sweeney, Brooklyn, L I, for a sign, Webster's Dictionary.

John W Gibbs, 36 Maiden Lane, for a gilt sign, Webster's Dictionary.

John G Quirk, Brooklyn, for a gilt sign, Webster's Dictionary.

Wm. McAllister, 2 Platt-street, for a sign, Webster's Dictionary.

RAW AND MANUFACTURED SILK.

Judges.—George M Haywood, A C Van Epps, John W. Chambers.

Manufactured Silk.

J Newstaedter, 52 Dey-street, for elegant silk brocade, gold medal.

E. J. Jenkins, 43 Broadway, for printing on Pongee handkerchiefs, diploma.

Raw Silk.

Miss Harriet Summy, Manheim, Pa , for the best reeled silk, (10 lbs.,) Van Schaick Premium of $10 and a bronze medal.

Miss Harriet Summy, Manheim, Pa., for the best bushel of peanut cocoons, Van Schaick Premium of $5 and a bronze medal.

Miss Harriet Summy, Manheim, Pa., for the best bushel of Paphos cocoons. Van Schaick Premium of $5 and a bronze medal.

STATIONERY.

Judges.—John C Motley, S A Rollo, Geo. C Mann.

Wm. Eaves, 295 Pearl-street, for the best embroidered envelopes and cards, diploma.

F A Long, 86 Nassau-st., for good cards and envelopes, diploma.

James O'Flyn, 100 Nassau-street, for envelopes, diploma.

James O'Flyn, 100 Nassau-street, for embossed cards, diploma.

Bogart W. Raper, 73 Maiden Lane, for excellent specimens of labels, diploma.

Koch & Co., 160 William-street, for well made portfolios, diploma.

Carson & Hard, 281 Pearl-street, for excellent marble paper, diploma.

SURGICAL INSTRUMENTS.

Judges.—D M Reese, M D, J M Carnochan, M D, C R Gilman, M D.

C. Palmer, Springfield, Mass., and Philadelphia, Pa., for an improvement in artificial limbs. A gold medal having been before awarded, diploma.

SYSTEMS OF CUTTING DRESSES.

Judges.—Mrs. Sarah A. Leonard, Mrs. Jane E. Gray, Mrs. Eliza L. Smith, Miss Mary Hickcox, Miss Jane A. Allaire.

Mrs. M. W. Demorest, 67 Canal-street, for the best system of cutting dresses, diploma.

Mrs. R. Githens, Philadelphia, Pa., for a system of cutting dresses, diploma.

TIN WARE.

Judges.—Philip Teets, Lucius Hart.

Minors' Work.

Edgar F. Musgrove, 16 years, 160 41st-street, for the best work on an oblong urn, Webster's Dictionary.

George White, 14½ years, 160 41st-st., for workmanship on a coffee pot and Etna, Webster's Dictionary.

Geo. Barnum, 14½ years, 160 41st-street, for workmanship on a filterer and stand, Webster's Dictionary.

TOBACCO AND SNUFF.

Judges.—P. C. Van Schaick, F. W. Pleasants.

Whitlock, Nichols & Co., 84 Front-street, for superior pound lump tobacco, diploma.

Whitlock, Nichols & Co., 84 Front-street, for extra choice twist tobacco, handsome workmanship, diploma.

J B Hoffman & Co., Albany, N. Y., for fine cut chewing tobacco and Maccoboy snuff, diploma.

TRUNKS AND CARPET BAGS.

Judges.—John Black, Richard A. Chambers, J. Johnson.

John Hill, 1 Warren-street, for superior travelling trunks, hat boxes, and travelling bags, gold medal.

TWINE.

Judges—Isaac V Brower, John A Bunting, John W Chambers.

Demarest & Joralemon, 104 Vesey street, for twine for knitting, diploma.

John T Hart, Philadelphia, Pa., for halyard and sash cord, diploma.

James Frenche, Lambertville Flax Mills, 41 Exchange place, for American shoe threads and twine, silver medal.

UMBRELLAS.

Judges—Jas R Smith, Isaac V Brower.

Calkins & Darrow, 34 Maiden Lane, for well finished umbrellas, diploma.

WEAVERS' REEDS AND HARNESS.

Judges—Alexander Knox, John Whittemore, P A Leonard.

Wm Low, Jr, Patterson, N J, for weavers' reeds and harness, diploma.

E D & G Draper, Conn., Andrews & Jessup, agents, 70 Pine st, for weavers' temples, diploma.

WIGS.

Judges—Wm A Batchelor, Wm Dibblee, Vair Clirehugh.

Medhurst & Heard, 27 Maiden Lane, for the best gentleman's wig, silver medal.

WOOLEN GOODS.

Judges—Jos W Corlies, Wm H Scofield.

Dorastus Kellogg, Skaneateles, N Y, Barnes, Bowers & Beeckman, agents, 45 Broadway, for the best black cassimeres, silver medal.

J & R H Hotchkiss, Hotchkissville, Conn., Atwater, Knapp & Co., 43 Broad street, for black cassimeres, diploma.

E S Hall, Millville, Mass., Bush & Munkittrick, agents, 32 Broad street, for the best fancy cassimeres, silver medal.

Nelson Palmer, Broadbrook, Conn., Bush & Munkittrick, agents, 32 Broad street, for fancy cassimeres, diploma.

Jones & Kershaw, Blockley, Pa., Barnes, Bowers & Beeckman, agents, 45 Broadway, for the best merino cassimeres, silver medal.

Mystic Co., Mystic, Conn., Willard & Wood, agents, 40 Broad street, for merino cassimeres, diploma.

G H Gilbert, Ware, Mass , for the best silk warp, and gauze wool flannels, gold medal.

C A Stevens, Ware, Mass., Dale & May, agents, 24 Broad st, for silk warp and wool flannels, a gold medal having been before awarded, diploma.

Ballard Vale Co., Ware, Mass., John Slade & Co., agents, 13 Broad street, for wool flannels, diploma.

Union Manufacturing Co., Norwalk, Conn., for plain finished and Petersham felt beaver cloth, a gold medal having been before awarded, diploma.

John Winpenny & Son, Manayunk, Pa., John Slade & Son, 13 Broad street, for beaver cloth, diploma.

R H Isham, Glennville, Conn., Bush & Munkittrick, agents, 32 Broad street, for felt beavers, diploma.

Salisbury Manufacturing Co., Salisbury, Mass., Hall & Fowle, agents, Boston, Mass., for silk warp tweed, diploma.

Rochdale Mills, Rochester, N H, Nesmith & Co., agents, 69 Broadway, for superior woolen blankets, a gold medal having been before awarded, diploma.

R G Hazard, Placedale, R I, Spring Bradley & Buffum, agents, 22 Broad street, for carriage robes, diploma.

O W Gardner, Boston, Mass., for the best hosiery, silver medal.

J J Hinchman, 58 Cedar street, for hosiery, diploma.

MISCELLANEOUS ARTICLES.

Judges—Jas R Smith, John A Bunting, Wm A Whitbeck, Isaac V Brower, Geo C Mann.

F Hale & Co., 80 Nassau street, for the best wire window shades, diploma.

Lee & Co., 309 Bleecker street, for gauze wire shades, diploma.

Peter Sythoff, Newark, N J, for mineral water and wine boxes, diploma.

Philip P Ruger, 236 17th street, for specimens of spiral moulding turning, diploma.

Henry Stidolph, 84 Leonard street, for superior frames, imitation of fire gilding, a silver medal having been before awarded, diploma.

H Brunswick, 46 Centre street, for wax figures, a silver medal having been before awarded, diploma.

Mills, Marcellus & Wedel, 181 Greenwich street, for wire bird cages, diploma.

Fowlers & Wells, 131 Nassau street, for phrenological specimens, diploma.

C H Tyler, 25 East Broadway, for a model of a tent, diploma.

Institution for the Blind, Eighth Avenue, for specimens of baskets, mats, &c., diploma.

Samuel Willard, Troy, N Y, for a portable screen frame, dipl'a.

Robt G McDougall, Jersey City, N J, for a portable house, silver medal.

S Dennis & Co, 71 Dey-street, for the best brooms, diploma.

N. E. Mining and Quarrying Co, Guilford, Vt, Charles Smead, agent, 95 Wall-street, for specimen of American slate, diploma.

H Goldsmith, Jr, 333 Broadway, for a portable water closet, diploma.

S W Goodridge & Co, 84 Broad street, for soap stone, diploma.

T J Downing, 3 Broad-street, for pickled oysters, diploma.

Budlong & Stoughton, 3 Front-street, for a marble table and specimen of marble, silver medal.

D M Smith & Co, Springfield, Vt, for improved clothes pins, diploma.

Nathan Thompson, Williamsburgh, L I, for a life bucket, diploma.

D D Miller, 190 Water-street, for speaking trumpets, silver medal.

Wm Webb, 3 Second Avenue, for excellent candle moulds, diploma.

J H Schoonmaker, 219 Fulton-street, for superior crackers, diploma.

Edwin W Hand, Neenah, Wisconsin, H A Coursen, agent, 76 Cortland street, for superior pearl ashes, diploma.

Jas. L Waugh, 112 Franklin-street, for the best gold leaf, silver medal.

Wm H Kemp, 95 Canal-street, for superior silver leaf, diploma.

Cornelius Mahoney, New-York, for a new system of musical notation, for the use of the blind, in the embossed print, diploma.

Minors' Work.

James Magee, Jr, 314, Mott-street, for a spool stand, Webster's Dictionary.

George L Pradnall, 142 Grand-street, for a metal sash show case, Webster's Dictionary.

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ILLUSTRATIONS.